



# THE FORGOTTEN BILLION

## MDG ACHIEVEMENT IN THE DRYLANDS



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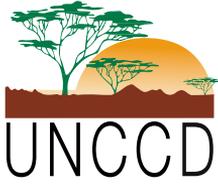
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Resilient nations.*

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## MDG ACHIEVEMENT IN THE DRYLANDS





## United Nations Convention to Combat Desertification (UNCCD)

Reversing and preventing desertification, alongside mitigating the effects of drought, are crucial to reducing poverty and improving environmental sustainability in drylands. Established in 1994, the United Nations Convention to Combat Desertification (UNCCD) is the sole legally binding international agreement linking the environment, development and the promotion of healthy soils. Its dual focuses on environmental and developmental concerns place it in a unique position to facilitate progress towards MDG achievement. The Convention's 194 signatory countries, or Parties, work to alleviate poverty in the drylands, maintain and restore the land's productivity, and mitigate the effects of drought.

Partnership lies at the heart of the UNCCD, casting resource users and their communities as central to the solution. This approach recognizes the interdependence of drylands and other world systems. The UNCCD Secretariat is the designated focal point for the United Nations Decade for Deserts and the Fight against Desertification (2010-2020).

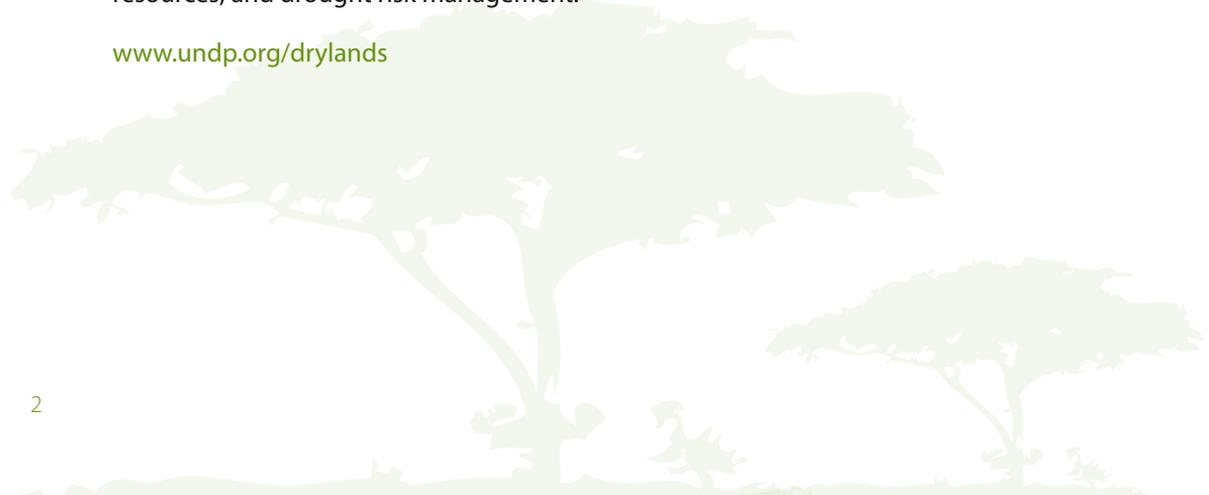
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## United Nations Development Programme (UNDP)

UNDP is the United Nation's global development network, an organization advocating for change and connecting countries to knowledge, experience and resources to help people build a better life. We are on the ground in 177 countries, working with them on their own solutions to global and national development challenges. As they develop local capacity, they draw on the people of UNDP and our wide range of partners.

UNDP Drylands Development Centre is a unique global thematic centre that provides technical expertise, practical policy advice and programme support for poverty reduction and development in the drylands of the world. The Centre's work bridges between global policy issues and on-the-ground activities, and helps governments to establish and institutionalize the link between grassroots development activities and pro-poor policy reform. The main areas of focus are mainstreaming of drylands issues into national development frameworks; land governance; making markets work for the poor; decentralized governance of natural resources; and drought risk management.

[www.undp.org/drylands](http://www.undp.org/drylands)



## Acronyms

BRIC countries	Brazil, Russia, India and China
GDP	Gross domestic product
LLDC	Landlocked developing country
MA	Millennium Ecosystem Assessment
MDG	Millennium Development Goal
MPI	Multidimensional Poverty Index
SLM	Sustainable land management
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme





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## Foreword

Drylands, which are home to a third of humanity, have some of the highest levels of poverty and hunger. The current famine ravaging the Horn of Africa underscores the need to address the root causes of this crisis by building resilience and improving rural livelihoods with a view to minimizing the negative impact and the scale of any future crisis: droughts do not happen overnight.

In many countries these areas also have a long history of neglect by investment and sustainable development interventions, having been marginalized from both development processes and political discourse. This marginalization cannot continue. In our increasingly globalized and interconnected world, drylands are important to us all for climatic, economic and geopolitical reasons.

The purpose of this document is to highlight the development challenges faced by people who live in drylands and to outline how these challenges can be tackled successfully and by doing so, help to achieve the MDGs. Policies designed to meet the needs of dryland peoples must be based on a sound understanding of the full complexity and dynamics of dryland ecosystems. They need to emphasize the value of dryland ecosystem services and the investment and marketing opportunities they offer.

These dryland-focused policy options must themselves be part of a more universal effort to mainstream drylands issues into national and international development frameworks as mandated by the United Nations Convention to Combat Desertification (UNCCD).

Hitting MDG targets in the world's drylands means recognizing and harnessing their full potential for development. It also involves restoring the initiative to dryland peoples themselves. In so doing, achievement of the MDGs in dryland regions will deliver great benefits not only to local communities, but to societies all across the globe.



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## Executive Summary

As the world reviews its progress in tackling global poverty and achieving the Millennium Development Goals (MDGs), drylands can no longer be ignored. Drylands account for more than a third of the world's land surface and more than 2 billion of its people. Yet for too long, drylands and their inhabitants have been neglected in development processes.

Drylands face indisputable development challenges, including limited water resources, relatively low biological productivity, and a history of political and economic exclusion. Traditional gender inequalities and conflict situations exacerbate these challenges. However, drylands also possess valuable assets, such as their unique natural resources, diverse cultures and resilient communities. Despite these assets, dryland populations — particularly in rural areas — include the poorest, hungriest, least healthy and most marginalized people in the world.

Identifying and understanding the multidimensional characteristics of poverty in drylands is the first step towards reversing their neglect. The association between drylands and poverty can be analysed at various scales, from the global to the subnational. A careful parsing of the evidence contained in the MDG Country Reports, several of which were developed with support from the United Nations Development Programme (UNDP), reveals that physical characteristics are just one of many factors that lead to spatial disparities in welfare. Socio-economic, political, and historical drivers also contribute to pockets of poverty.

The MDG Country Reports — and UNDP's synthesis of the evidence contained in those reports — provide a window on the common challenges and bottlenecks that constrain development. While many of these issues are common to dryland and non-dryland areas alike, particular combinations of sociocultural, economic, climatic and institutional challenges are dryland-specific. The progress in many countries, particularly the 'BRIC'<sup>1</sup> countries of Brazil, India and China, illustrates how these challenges can be surmounted. As documented in the MDG Country Reports and elsewhere, there have been impressive, if isolated, successes in combating poverty in the drylands.

Unlocking the potential of the world's drylands requires the participatory development and implementation of an integrated strategy to enhance the well-being of dryland communities, build their capacity to adapt to environmental uncertainty, and protect critical dryland ecosystem services. This strategy will require an upgraded knowledge base so policy makers can better understand dryland challenges and opportunities and apply that understanding to improved governance structures. It should also accurately account for the economic value of dryland ecosystem services; promote sustainable public and private investment in drylands; and support institutional changes that strengthen natural resource rights, reform inequitable patterns of distribution and increase human and ecologic resiliency.

<sup>1</sup> Of the four emerging global powers frequently referred to as the 'BRIC' countries (Brazil, Russia, India and China), Brazil, India and China have significant dryland areas within their territories.

The United Nations Convention to Combat Desertification (UNCCD) represents the international community's commitment to improve living conditions in developing country drylands. Its dual focus on the environment and development position it as a unique mechanism to facilitate MDG achievement in the world's drylands. The UNCCD legitimizes the mainstreaming of dryland concerns into broader poverty reduction efforts, recognizing that policies proven in dryland contexts can often be applied successfully in non-dryland contexts.

Policies aimed at dryland challenges should reflect five broad conditions for success, drawn from the MDG Country Reports. First, development strategies should be country-led and supported through effective governance that incorporates the needs of dryland populations through participatory processes. Second, economic growth must be inclusive and pro-poor, with agricultural growth strategies that maximize the comparative advantage of particular areas. Third, service delivery in drylands must be improved. Public investment in health, education and basic services is critical to improving living conditions in line with the MDGs. Fourth, targeted social assistance and public employment programmes should efficiently focus benefits on the geographic areas where they are most needed. Finally, development agendas must be fully integrated with programmes that both respond to the vulnerabilities associated with climate change and recognize that drylands provide opportunities to address climate change through services such as carbon sequestration and renewable energy generation.

Dryland-focused policy options must be incorporated into national development agendas if they are to have a significant and pervasive impact on poverty levels. Extending the benefits of MDG advances to drylands requires a recognition in both policy and practice that just as drylands are integral to the social, economic and ecological fabric of a country and region, so too must be the responses to their challenges and opportunities.





## Résumé analytique

Alors que le monde passe en revue les progrès enregistrés sur le front de la réduction de la pauvreté et la réalisation des Objectifs du Millénaire pour le développement (OMD), le défi posé par les terres arides ne peut plus être ignoré. En effet, ces zones représentent plus d'un tiers de la surface du globe et abritent plus de 2 milliards de ses habitants. Pourtant, pendant trop longtemps, les terres arides et leurs populations ont été laissées pour compte dans les processus de développement.

Les zones arides sont confrontées à des défis incontestables en matière de développement, notamment en raison de leurs ressources en eau limitées, leur productivité biologique relativement faible et leur longue histoire d'exclusion politique et économique. Ces obstacles sont d'autant plus exacerbés par les situations de conflit et les inégalités traditionnelles en matière de genre. Cependant, les zones arides possèdent aussi des actifs de grande valeur, telles que leurs ressources naturelles uniques, la diversité de leurs cultures et la résilience de leurs communautés. En dépit de ces atouts, les populations des terres arides, particulièrement en milieu rural, comptent parmi leurs habitants les individus les plus pauvres, les plus affamés, les plus mal soignés et les plus marginalisés au monde.

L'identification et la compréhension des caractéristiques multidimensionnelles de la pauvreté dans les zones arides est une étape préliminaire fondamentale pour renverser la situation de négligence dont celles-ci ont longtemps fait les frais. L'association entre terres arides et pauvreté peut être analysée à différents niveaux, au plan mondial comme à l'échelon sous-national. Une analyse sémantique rigoureuse appliquée aux preuves et aux témoignages relatés dans les rapports de pays relatifs aux objectifs du Millénaire pour le développement, élaborés avec l'appui du programme des Nations Unies pour le développement (PNUD), révèle que les caractéristiques physiques ne sont juste qu'un élément parmi les nombreux facteurs qui conduisent aux disparités spatiales en termes de bien-être. Des vecteurs socio-économiques, politiques et historiques contribuent également aux poches de la pauvreté.

Les rapports de pays relatifs aux OMD ainsi que la synthèse effectuée par le PNUD de l'ensemble des preuves qui y sont présentées offrent un aperçu des défis et des goulots d'étranglement qui entravent généralement le processus de développement. Alors que bon nombre de ces questions sont communes aux zones arides et non arides, les combinaisons de difficultés d'ordre socioculturel, économique, climatique et institutionnel sont bel et bien spécifiques aux zones arides. Les progrès accomplis par de nombreux pays, particulièrement au sein du groupe BRICS<sup>1</sup>, notamment le Brésil, l'Inde et la Chine, montrent qu'il est possible de triompher de ces obstacles. Les rapports de pays relatifs aux OMD ainsi que d'autres documents pertinents font toutefois état, preuves à l'appui, de certains succès impressionnants obtenus en matière de lutte contre la pauvreté dans les zones arides, même s'il ne s'agit que de cas isolés.

La valorisation du potentiel des terres arides fait appel au développement participatif et à la mise en œuvre d'une stratégie intégrée, permettant d'améliorer le bien-être des communautés vivant

<sup>1</sup> Des quatre puissances émergentes communément désignées par les pays du groupe BRIC (Brésil, Russie, Inde et Chine), le Brésil, l'Inde et la Chine comptent des zones arides considérables sur leur territoire.

dans les zones arides, de renforcer leurs capacités à s'adapter aux incertitudes de l'environnement et de protéger les services critiques liés aux écosystèmes dans ces régions. Une telle stratégie nécessite la mise à niveau de la base des connaissances de sorte que les décideurs soient mieux armés pour appréhender l'ampleur des défis mais aussi des opportunités que représentent ces zones et utiliser cette compréhension en vue d'améliorer les structures de la gouvernance. Cette stratégie est également censée rendre compte avec précision de la valeur économique des services écosystémiques dans les zones arides, promouvoir les investissements publics et privés durables dans ces régions et appuyer les changements institutionnels susceptibles de renforcer l'exercice des droits attachés aux ressources naturelles, réformer les modèles de distribution inégalitaires et augmenter la résilience humaine et écologique.

La Convention des Nations Unies sur la lutte contre la désertification (UNCCD) symbolise l'engagement pris par la communauté internationale pour améliorer les conditions de vie en zone aride dans les pays en développement. Sa double focalisation sur l'environnement et le développement place l'UNCCD dans une position privilégiée comme mécanisme unique permettant de faciliter la réalisation des OMD dans les zones arides du monde. L'UNCCD confère une légitimité à l'intégration des préoccupations liées aux terres arides dans les efforts élargis de lutte contre la pauvreté, en reconnaissant que les politiques éprouvées dans le contexte des zones arides peuvent être appliquées avec succès à d'autres situations.

Pour être assurées de réussite, les politiques visant à relever les défis associés aux terres arides sont tenues de refléter cinq conditions principales, mises en évidence dans les rapports de pays relatifs aux OMD. En premier lieu, les stratégies de développement envisagées doivent être parrainées par les pays concernés eux-mêmes et appuyées par une gouvernance efficace qui tient compte des besoins des populations vivant dans les zones arides par le biais de processus participatifs. Deuxièmement, la croissance économique doit être inclusive et favorable aux pauvres, et s'accompagner de stratégies de croissance agricole susceptibles d'optimiser l'avantage comparatif propre à ces régions. Troisièmement, la fourniture de services dans les zones arides doit être améliorée. L'investissement public en matière de santé, d'éducation et de services de base est primordial pour améliorer les conditions de vie conformément aux OMD. Quatrièmement, les programmes ciblés d'assistance sociale et d'emploi public doivent être appliqués à bon escient afin qu'ils profitent aux régions géographiques qui en ont le plus besoin. Enfin, les plans d'action pour le développement doivent comporter des programmes destinés à répondre aux vulnérabilités associées au changement climatique tout en reconnaissant que les zones arides offrent, à cet égard, des opportunités remarquables pour traiter le changement climatique par le biais de services tels que la séquestration du carbone et la production d'énergies renouvelables.

Pour qu'elles aient un impact significatif et une influence prépondérante sur la pauvreté, les politiques se rapportant aux terres arides doivent être incorporées aux plans d'action nationaux pour le développement. L'extension aux zones arides des bienfaits tirés des progrès accomplis sur le front de la réalisation des OMD passe par la reconnaissance, tant au niveau des politiques que des pratiques, du fait que les zones arides font partie intégrante du tissu social, économique et écologique d'un pays et d'une région, et qu'à ce titre, il doit en être de même des réponses apportées aux défis et aux opportunités qu'elles représentent.



## Resumen

En la medida en que el mundo hace una revisión de sus avances para erradicar la pobreza mundial y alcanzar los Objetivos de Desarrollo del Milenio (ODM), ya no se puede continuar ignorando a las tierras áridas. Estas representan más de un tercio de la superficie terrestre y en ella habitan más de 2 mil millones de personas. Sin embargo, durante demasiado tiempo, las tierras áridas y sus habitantes han sido dejadas de lado en los procesos de desarrollo.

Las tierras áridas enfrentan retos de desarrollo indiscutibles, incluidos los limitados recursos hídricos, una productividad biológica relativamente baja, y una histórica exclusión política y económica. Las tradicionales inequidades de género y las situaciones de conflicto agravan estos retos. Sin embargo, las tierras áridas también poseen valiosos atractivos, tales como sus recursos naturales inigualables, diversidad cultural y comunidades resistentes. A pesar de estas ventajas, entre la población de las tierras áridas —especialmente en las zonas rurales— se encuentran los pueblos más hambrientos, menos saludables y más marginados de todo el mundo.

Identificar y entender las características multidimensionales de la pobreza en las tierras áridas es el primer paso para revertir su exclusión. El vínculo entre las tierras áridas y la pobreza se puede analizar en varias escalas, de lo global a lo subnacional. Un análisis minucioso de los datos que contienen los Informes de País sobre los ODM, varios de los cuales fueron elaborados con apoyo del Programa de las Naciones Unidas para el Desarrollo (PNUD), revela que las características físicas son uno de los muchos factores que provocan desigualdades espaciales en cuanto al bienestar social. Determinantes socioeconómicos, políticos e históricos también pueden contribuir a crear enclaves de pobreza.

Los Informes de País sobre los ODM — y la síntesis del PNUD sobre los datos que contienen esos informes — proporcionan una visión de los retos más usuales y los cuellos de botella que obstaculizan el desarrollo. Aunque muchos de estos problemas son compartidos por las tierras áridas y otras zonas, existen ciertas combinaciones de retos socioculturales, económicos, climáticos e institucionales que son específicas de las tierras áridas. El progreso en muchos países, en especial los países 'BRIC'<sup>1</sup>, Brasil, India y China, ilustra cómo se pueden superar estos retos. Conforme lo registran los Informes de País sobre los ODM y en otros lados, en las tierras áridas se han obtenido éxitos extraordinarios, si bien aislados, en la lucha contra la pobreza.

Liberar el potencial de las tierras áridas del mundo, requiere del desarrollo participativo y la implementación de una estrategia integral para aumentar el bienestar de las comunidades de las tierras áridas, desarrollar su capacidad de adaptación a la incertidumbre ambiental, y proteger los servicios ecosistémicos cruciales de las tierras áridas. Esta estrategia requerirá una base de conocimiento mejorada para que quienes formulan las políticas puedan entender mejor los retos y las oportunidades de las tierras áridas y apliquen ese conocimiento a estructuras de gobernabilidad mejoradas. También debe rendir cuentas con precisión por el valor económico de los servicios

<sup>1</sup> De las cuatro economías emergentes en el mundo, con frecuencia llamadas los países 'BRIC' (Brasil, Rusia, India y China), Brasil, India y China tienen considerables extensiones de zonas áridas dentro de sus territorios.

ecosistémicos de las tierras áridas; promover la inversión pública y privada sostenible en las tierras áridas; y apoyar los cambios institucionales que fortalezcan los derechos de los recursos naturales, reformen los patrones desiguales de distribución y aumenten la resistencia humana y ecológica.

La Convención de las Naciones Unidas de Lucha contra la Desertificación (UNCCD por sus siglas en inglés) representa el compromiso de la comunidad internacional para mejorar las condiciones de vida en las tierras áridas de los países en desarrollo. Su doble enfoque, en el medio ambiente y el desarrollo, lo caracterizan como un mecanismo único para facilitar el logro de los ODM en las tierras áridas del mundo. La UNCCD legitima la transversalización de las inquietudes de las tierras áridas en los esfuerzos más amplios para la reducción de la pobreza, reconociendo que las políticas que tienen éxito en contextos de tierras áridas, a menudo se pueden aplicar con éxito en otros contextos.

Las políticas dirigidas a vencer los desafíos de las tierras áridas deben reflejar cinco condiciones básicas para obtener éxito, y que surgen de los Informes de País sobre los ODM. Primero, las estrategias de desarrollo deben estar dirigidas por el país y apoyadas por una gobernabilidad eficaz que incorpore las necesidades de la población de las tierras áridas mediante procesos participativos. Segundo, el crecimiento económico debe ser inclusivo y pro pobre, con estrategias de crecimiento agrícola que optimicen las ventajas comparativas de cada área en particular. Tercero, la prestación de servicios en las tierras áridas debe mejorar. La inversión pública en salud, educación y servicios básicos es crucial para mejorar las condiciones de vida según las pautas de los ODM. Cuarto, los programas de asistencia social correctiva y empleo público deben enfocarse eficazmente en las áreas geográficas donde son más necesarios. Finalmente, las agendas de desarrollo deben estar totalmente integradas con programas que respondan a las vulnerabilidades asociadas con el cambio climático y que reconozcan que las tierras áridas pueden brindar oportunidades para abordar el cambio climático a través de servicios tales como retención de carbono y producción de energía renovable.

Para extender los beneficios del progreso de los ODM a las tierras áridas, es necesario reconocer tanto en las políticas como en la práctica que así como las tierras áridas son parte integral de la sustancia social, económica y ecológica de un país y una región, también lo deben ser las respuestas a sus desafíos y oportunidades.





# 1. Drylands in perspective

Home to more than 2 billion people in nearly 100 countries, drylands cover about 40 percent of the world's land surface.<sup>2</sup> They encompass a wide variety of environments, including sandy deserts, temperate grasslands and savanna woodlands. Drylands are found on every continent but are most extensive in Africa and Asia (Figure 1.1). They are characterized by limited water resources — precipitation is often scarce and unreliable and evaporation is typically high. On average, drylands range in primary productivity from hyper-arid, arid and semi-arid, to dry subhumid. However, averages mask considerable variability. Rainfall totals may fluctuate from year to year and over short distances. The result is a group of diverse and dynamic physical environments.

Globally, about half of all dryland inhabitants are poor.<sup>3</sup> Many depend on a highly variable natural resource base for their livelihood and are constrained by socio-economic conditions that are worse than in other areas of the world. Most drylands are located in developing countries and approximately 90 percent of dryland peoples live in developing countries.<sup>4</sup> Sustainable development in the drylands would help reduce poverty and hunger worldwide. Indeed, it will be impossible to meet the Millennium Development Goals (MDGs) of halving world poverty and hunger by 2015 if life does not improve for the poor people of the drylands.<sup>5</sup> Together, they are the 'forgotten billion'.<sup>6</sup>

<sup>2</sup> This report defines drylands as terrestrial areas with an aridity index value of less than 0.65, equivalent to annual mean potential evapotranspiration of at least c1.5 times greater than annual mean precipitation (Middleton and Thomas, 1997). This report recognizes four dryland subtypes: dry subhumid, semi-arid, arid and hyper-arid, based on an increasing moisture deficit or level of aridity. Although this scheme specifically excludes high-latitude and mountainous drylands, this report includes the dryland high-altitude plateaus of Tibet and the Altiplano-Puna plateau of the central Andes.

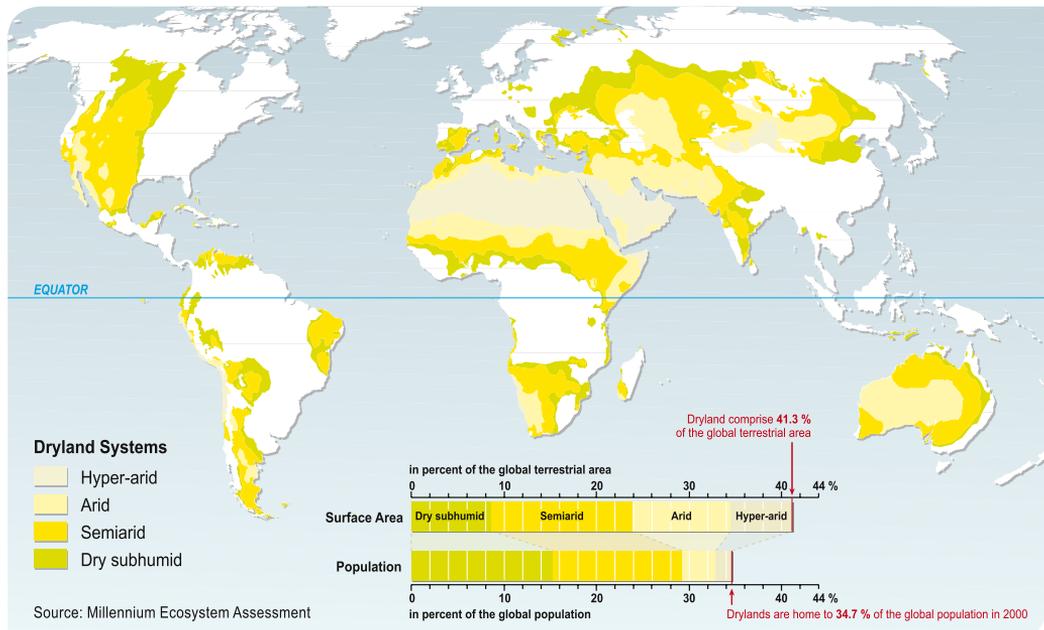
<sup>3</sup> UN Secretary-General (2010).

<sup>4</sup> Safriel et al. (2005).

<sup>5</sup> UNDP (2007).

<sup>6</sup> The figure of approximately 1 billion poor rural dryland inhabitants is widely used (e.g. de Oliveira et al., 2003) and was first cited by Dobie (2001).

Figure 1.1 The world's drylands



Although dryland populations may be rich or poor, urban or rural, this report focuses on the rural poor. Rural dryland livelihoods depend on herding in the drier areas and rain-fed cultivation in less arid regions, with many people also engaged in wild harvesting from common resources. Over years of coping with the vagaries of their environment, dryland inhabitants have developed strategies to manage risk and variability. Nevertheless, many remain vulnerable to natural perturbations, particularly drought, pests, fire and disease. In addition to relatively short-term changeability in natural systems, many dryland inhabitants face more progressive forms of deterioration, such as land degradation and desertification.<sup>7</sup> The scarcity of water underpins many of these challenges: although one third of humanity lives in drylands, they enjoy just 8 percent of the world's renewable water supply.<sup>8</sup>

## Dispelling the myths about drylands

Despite the difficulties of living in drylands, people have successfully inhabited these areas for thousands of years. Historically, drylands played a central role in the development of human societies. The domestication of plants and animals, the creation of the city, and the advent of at least three major world religions can be traced to drylands.<sup>9</sup> Today, drylands provide much of the world's grain and livestock. Semi-arid areas such as the North American Great Plains, the Pampas in Argentina and the wheat belts of Ukraine and Kazakhstan produce a significant

<sup>7</sup> Desertification is land degradation in arid, semi-arid, and dry subhumid areas resulting from various factors, including climatic variations and human activities. Land degradation means reduction of or loss in the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, range, pasture, forest or woodlands (UNCCD, 1993). Though this definition excludes the hyper-arid drylands, this document explores MDG achievement in all global drylands, including the hyper-arid areas.

<sup>8</sup> Safriel et al. (2005).

<sup>9</sup> Middleton (2009).



proportion of the world's cereals. Similarly, dryland rangelands support about 50 percent of the world's livestock.<sup>10</sup> Drylands are also the setting for major cities such as Beijing, Cairo, Delhi, Karachi, Los Angeles and Mexico City.

Despite their historical and contemporary significance, drylands are the subject of several misconceptions that impede their sustainable development.<sup>11</sup> One misconception is that drylands are barren places with little economic value. In truth, the value of dryland ecosystem services — to national economies and the lives of local people — is much higher than previously understood, even though their biological productivity is relatively low.<sup>12</sup> A better appreciation of this value will help correct the notion that drylands cannot yield satisfactory and sustainable returns on investment due to the high risks associated with low and unreliable rainfall. Not least, poor people's private investments are significant.

Equally erroneous is the notion that drylands' seclusion, poverty and low biological productivity condemn them to be weakly integrated into markets. In fact, dryland communities have long used markets to drive their development and the importance of this economic strategy is rapidly increasing. Markets can function even under uncertain conditions.

Greater respect for the resilience of dryland peoples goes hand in hand with an improved understanding of how dryland ecosystems operate. Contrary to the view that drylands are prone to relentless desertification, a new understanding of resilience in these environments emphasizes their variability as 'disequilibrium' systems.<sup>13</sup> Further, the integrated approach to dryland challenges advocated by the Drylands Development Paradigm<sup>14</sup> emphasizes the complex co-evolution of human and ecological systems in drylands.

Dryland communities are not, as often perceived, resistant to change. On the contrary, life in drylands requires inhabitants to be continually dynamic in response to their changing environment. Their existing adaptive capacity, assisted by appropriate policies and research, can offer viable pathways to development. The notion that standard development policy can adequately address risk and vulnerability in drylands must yield to emerging approaches that build on local and customary practices, often confronting variability directly.

The misapprehension that drylands contribute little to national and global economies and values should also be corrected. Drylands are increasingly important when viewed through the lens of emerging global issues such as food security and climate change. Meeting global food targets requires improved, sustainable management of dryland resources, including water, land and nutrients. The variability of dryland output must be reduced while production increases in line with global needs.

<sup>10</sup> Allen-Diaz et al. (1996).

<sup>11</sup> Mortimore et al. (2009).

<sup>12</sup> The amount of organic matter or biomass produced over an average year, principally through the process of photosynthesis, is limited in drylands by their aridity.

<sup>13</sup> Behnke et al. (1993).

<sup>14</sup> Reynolds et al. (2007).

## Drylands in an interconnected world

Clearly, drylands do not exist in isolation. A better understanding of the interconnectivity of Earth systems and the effects of rapid globalization highlights the innumerable ways drylands interact with global ecological, climatic, economic and geopolitical systems.

The global biophysical impacts of drylands include their role as the planet's largest sources of soil dust — a material that can travel thousands of kilometres and affect soil fertility, ocean productivity and the chemistry of the atmosphere.<sup>15</sup> Drylands also influence climate through their large areas of relatively high albedo — a function of sparse vegetation cover — that affect the global radiation budget.<sup>16</sup>

Although climate change scenarios suggest significant impacts in drylands,<sup>17</sup> these areas can also play important roles in mitigating the global effects of climate change, through sequestering carbon in soils and vegetation, for example. The large surface area of drylands and their long-term soil storage helps accounts for their significant proportion of the global carbon stock — more than a third, with the potential to sequester even more.<sup>18</sup> Drylands also offer opportunities to expand the generation of solar and wind energy, and the expertise of dryland peoples in dealing with environmental variability and sparse resources can provide insights and practical strategies for other regions grappling with climate variability and adaptation.<sup>19</sup>

The global socio-economic impacts of drylands are also numerous. They range from the economic importance of key fossil fuels concentrated beneath dryland terrain to the position of drylands as important starting points for emigration. Droughts and desertification push people out of drylands, creating economic migrants and environmental refugees. While temporary migration has long been an important rural coping strategy, increasing numbers now migrate internationally and for longer periods.<sup>20</sup>

Migrants pushed by environmental degradation can adversely affect political and economic stability locally, regionally and internationally. Drylands are some of the most conflict-prone regions of the world, with populations vying for limited and valuable natural resources. Competition for scarce resources is exacerbated by the refugee load. Some of these conflicts attract foreign intervention.<sup>21</sup>

<sup>15</sup> Goudie and Middleton (2006).

<sup>16</sup> Pinty et al. (2000). The albedo, or reflectivity, of the Earth's surface is an important determinant of how much solar radiation remains in the atmosphere, energy that drives the planet's climate system.

<sup>17</sup> Christensen et al. (2007).

<sup>18</sup> Trumper et al. (2008).

<sup>19</sup> Safriel (2009), Mortimore (2010).

<sup>20</sup> Leighton (2006), Brauch and Spring (2009).

<sup>21</sup> Leighton (2007), Sachs (2008).



## Framing the analysis of MDG achievement in the drylands

As the world moves towards achieving the MDGs, progress will be accelerated by focusing on proven strategies, policies and interventions.<sup>22</sup> *The Forgotten Billion: MDG Achievement in the Drylands* offers a fresh perspective on that task.<sup>23</sup> It views the issues of MDG achievement not through the lens of national boundaries, but through the framework of natural endowments. Focusing sustainable development strategies, policies and interventions on pockets of poverty in drylands will make the path to achieving the MDGs more direct and cost effective.

*The Forgotten Billion* is organized into five chapters. This first chapter places drylands in perspective, exploring the conditions that define them and their inhabitants and exposing some of the myths that hinder their sustainable development. Chapter 2 presents key empirical evidence that demonstrates the connection between drylands and poverty on a range of geographical scales: regional, national and subnational. Chapter 3 highlights the challenges and bottlenecks to achieving MDG targets in dryland areas. It draws on specific MDG Country Reports to present notable success stories and explores lessons learned from Brazil, India and China. Chapter 4 expounds on these lessons to set out the building blocks that support a successful dryland development strategy. It stresses the need for an integrated view of the interactions between humans and their natural environment and the need to accurately evaluate the value of dryland ecosystems. Chapter 5 outlines five areas for policy makers to target as they strive to achieve the MDGs. While some of these approaches target dryland-specific conditions, others are more broadly applicable. The report concludes with a set of recommendations for the international community to consider as it moves towards the 2015 deadline for achieving the MDGs.

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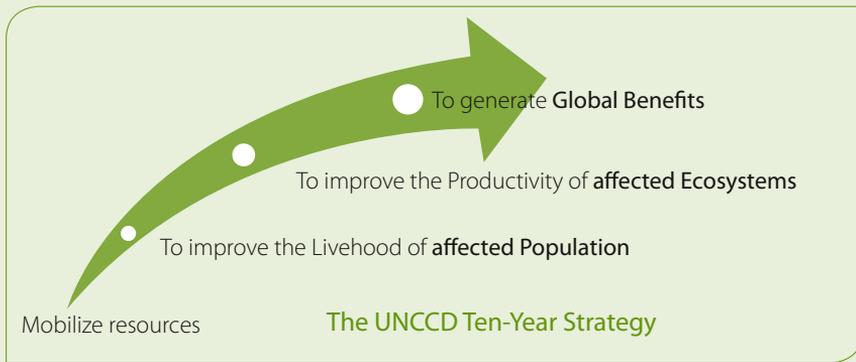
<sup>22</sup> UNDP (2010a).

<sup>23</sup> This assessment of MDG achievement in drylands is based on a number of MDG synthesis documents – particularly UNDP (2010a and b) and UNDG (2010) – and individual MDG Country Reports from countries with dryland regions – particularly Botswana, Burkina Faso, Ethiopia, Ghana, Kenya, Kyrgyzstan, Syria and Uzbekistan – as well as relevant research and reviews published elsewhere.

**Box 1.1 The UNCCD, a unique convention**

Reversing and preventing desertification, alongside mitigating the effects of drought, are key inputs to any attempts to reduce poverty and improve environmental sustainability in drylands. Hence, the United Nations Convention to Combat Desertification (UNCCD), developed as a result of the Rio Summit, has a pivotal role to play as the only global treaty focused on developing countries and on improving living conditions. Its dual foci, on matters environmental and developmental, give it a unique position in facilitating progress towards MDG achievement since numerous tools and policies proven in the dryland context can be translated elsewhere, while many others will be independent of natural environmental conditions.

Partnership lies at the heart of the UNCCD, casting resource users and their communities as central to the solution rather than part of the problem. This approach recognizes the interdependence of drylands and other world systems. The UNCCD Secretariat has been designated as the focal point for the UN Decade for Deserts and the Fight against Desertification (2010-2020).





# 2.

## Development status and MDG challenges in the drylands

Drylands and poverty are linked on various geographical scales, from the global and regional to the national and subnational. Undeniably, scale matters. A region such as Latin America and the Caribbean may be on track to reach many MDG targets at the aggregate level, but disaggregated data may reveal major inequalities at the national and subnational levels.<sup>24</sup> Similarly, nationwide indicators may mask significant disparities between subnational regions. A country on track to miss an MDG target may find the target is achievable by focusing on a particular pocket of poverty.

### Global and regional scales

Dryland inhabitants are among the poorest people on the planet. According to the United Nations Development Programme (UNDP) Human Development Index, 5 of the bottom 10 positions are occupied by countries where most of the population lives in drylands (Afghanistan, Burkina Faso, Chad, Mali and Niger). Another three very poor dryland countries (Iraq, Somalia and Zimbabwe) are unranked due to a lack of data.<sup>25</sup>

The Millennium Ecosystem Assessment (MA) — a landmark survey of global ecosystems — shows that people living in drylands lag behind the rest of the world in human well-being and other indicators of development. Some of the contrasts highlighted in the MA are stark. The average infant mortality rate (an indicator for MDG 4: Reduce child mortality) for all dryland developing countries is at least 23 percent greater than non-dryland countries.<sup>26</sup> A comparison of infant mortality and gross national product per capita in seven ecological systems in Asia shows drylands as the poorest (Figure 2.1).

<sup>24</sup> ECLAC (2010a) Box IV.9.

<sup>25</sup> UNDP (2009).

<sup>26</sup> Safriel et al. (2005).

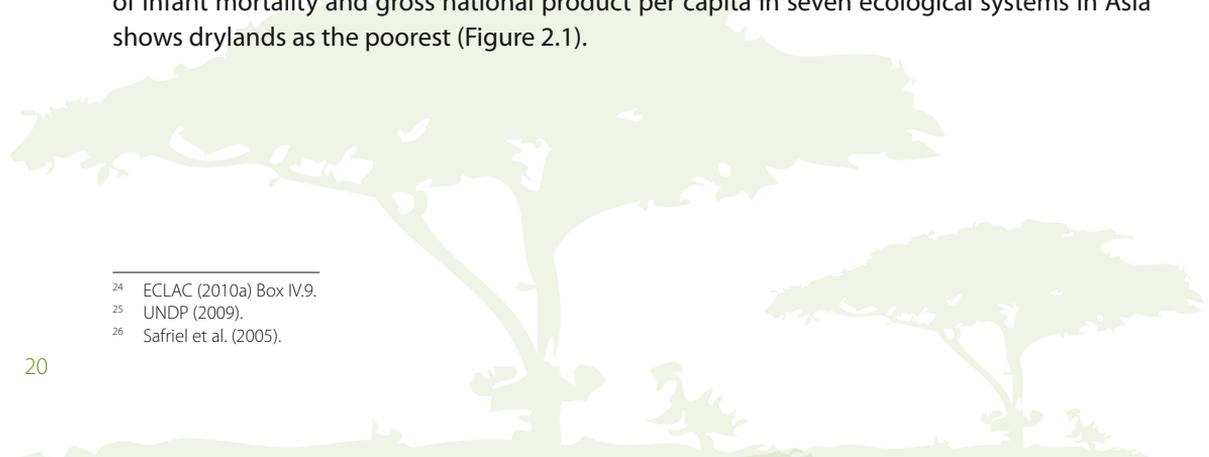
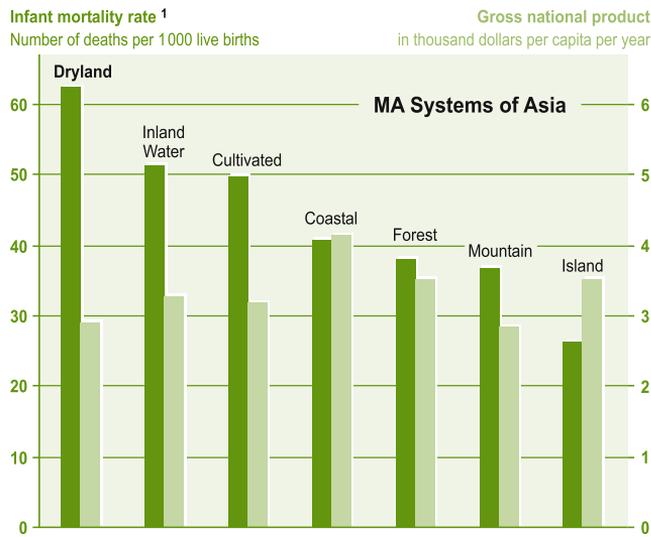


Figure 2.1 Comparison of infant mortality and gross national product per capita in drylands and other MA systems in Asia



<sup>1</sup> Number of children less than one year old dying in a year, per 1000 live births during that year  
 Source: Millennium Ecosystem Assessment

Source: Safriel et al. (2005).

The MA explicitly links its definition of human well-being to the availability of provisioning ecosystem services (food, forage, water, etc.), suggesting the low level of well-being in drylands relates to the inherently low natural rate of provision of ecosystem services.<sup>27</sup> In areas of desertification, human well-being may decline further. Environmental degradation can have particular significance for the poor given their characteristically high economic dependence on natural resources.<sup>28</sup>

On the continental scale, a global study using subnational data disaggregated into 14 biomes reveals that infant mortality is higher in resource-poor and water-scarce drylands.<sup>29</sup> In Asia, deserts have a higher infant mortality rate than any other biome. Similarly, the deserts in South America and Europe experience much higher than average infant mortality rates. The International Fund for Agricultural Development notes the association between rural poverty and drylands in Latin America and the Caribbean.<sup>30</sup> The arid and semi-arid areas of north-eastern Brazil, northern Mexico, north-eastern Venezuela, southern Bolivia, and northern Peru and Chile, are inhabited by a third of the region’s poor population, some 24 million people.

In sub-Saharan Africa, a study mapping poverty by livelihood zones found high proportions of rural poor in pastoral and agropastoral drylands (52 and 42 percent, respectively)<sup>31</sup> and attributed the main drivers of poverty in these areas to climate variability and vulnerability

<sup>27</sup> Safriel et al. (2005).

<sup>28</sup> See Cavendish (2000), Brocklesby and Hinshelwood (2001).

<sup>29</sup> Storeygard et al. (2008).

<sup>30</sup> IFAD (2001).

<sup>31</sup> FAO (2008) Part 3.



to droughts. The study emphasized the effects of climate on crop failure, food shortages and weakened livestock (resulting in deaths and declining prices), along with the exacerbating effects of low asset levels. Poorer households remain chronically food insecure because they cannot grow enough grain to feed themselves and they do not have the assets to exchange for grain. A recent mapping study of Africa using household-level data also correlates drought with child malnutrition.<sup>32</sup>

Empirical evidence confirms that natural disaster risk is associated with poverty at multiple geographical scales.<sup>33</sup> Countries with small and vulnerable economies, such as landlocked developing countries (LLDCs), suffer higher relative levels of economic loss with respect to the size of gross domestic product (GDP) and have a particularly low resilience to loss. Countries with the highest economic vulnerability to natural hazards and the lowest resilience are also those with very low participation in world markets and low export diversification. Drought has a major recurrent impact on LLDCs in sub-Saharan Africa with significant dryland areas: Botswana, Burkina Faso, Chad, Ethiopia, Malawi, Mali, Niger, Zambia and Zimbabwe. The disproportionate impact on the poor within these countries is also notable, both in the short and long term (see Box 2.1).

In some regions, elements of human well-being decline in parallel with aridity. This pattern strengthens the notion that the degree of aridity is associated with the quality of ecosystem services. This is partly because as the average rainfall declines, the variability of that rainfall increases, making it more difficult to manage and benefit from it.<sup>34</sup> The relationship between adult female literacy (an indicator for MDG 2: Achieve universal primary education) and aridity gradients in West Africa provides an example of this connection (Figure 2.2).

### Box 2.1 The disaster risk-poverty nexus

Droughts disproportionately affect the poor in developing dryland countries, particularly in sub-Saharan Africa. One study of the 1984 – 1985 drought in Burkina Faso found that the poorest third of a sample of rural households experienced crop income losses that were 10 percent higher than the wealthiest third (69 percent compared to 58 percent). Remaining assets are typically sold to buffer losses from drought, but prices are often depressed by the number of people selling their assets after a natural disaster. This is particularly the case with livestock or other possessions in remote areas with limited access to markets. During the 1999 drought in Ethiopia, livestock herds declined by almost 40 percent, and 25 percent of livestock reductions were estimated to be distress sales in which the seller received less than half the normal price.

Drought-induced reductions in income or consumption often have negative effects on other aspects of human welfare and development. In countries where the socio-economic status of women is low, drought disasters can intensify existing patterns of discrimination. The 1994 – 1995 drought in Zimbabwe saw a decline in body mass among rural women of about 3 percent, while no impact was found on men's health. With good rains in Zimbabwe the following year, women regained much of their lost body mass. However the effects of drought on health are not always temporary. In Ethiopia, children between the womb and 36 months of age living in drought-affected villages during the 1984 famine were almost 3 centimetres shorter 10 years after the disaster than their non-affected counterparts.

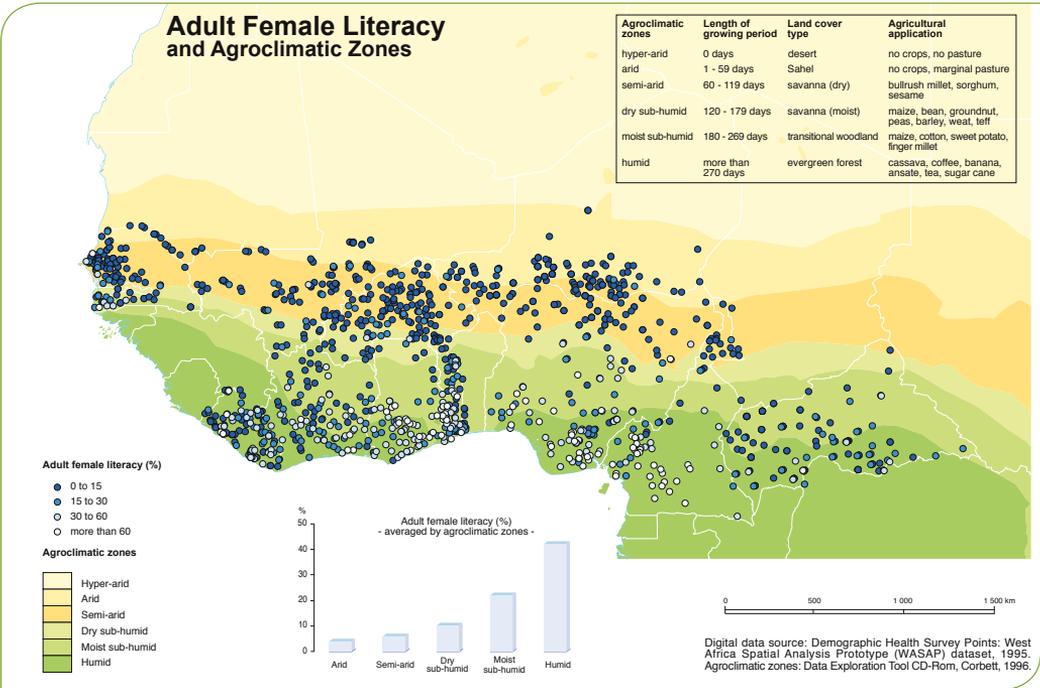
Source: Fafchamps et al. (1998), Hoddinott (2006), Porter (2008)

<sup>32</sup> de Sherbinin (2009).

<sup>33</sup> UNISDR (2009).

<sup>34</sup> It is well known that year-to-year variability in rainfall increases in a fairly predictable manner with decreasing mean annual rainfall. See, for example, Nicholls and Wong (1990).

Figure 2.2 Adult female literacy and agroclimatic zones in West Africa (1997)



Source: UNEP/GRID-Arendal and FAO (1997). Cartographer and designer: Emmanuelle Bournay and Philippe Rekacewicz. Data: Statistics Norway / SSB, 1997.

While an association between the environmental characteristics of a place and the well-being of its inhabitants may be explicable, these relationships are seldom straightforward. A host of socio-economic, political and historical drivers also influence well-being. Physical isolation, political marginalization and a general lack of infrastructure, including limited access to markets and health facilities, further contribute to concentrations of poverty (see Table 2.1).

**Table 2.1 Characteristics associated with concentrations of chronic poverty in rural areas**

**Low potential**  
Areas with low agricultural or natural resource potential due to combinations of biophysical attributes, including climatic, hydrological, topographical, soils, pests and diseases.

**Remoteness**  
Areas far from the centres of economic and political activity in terms of physical distance and/or travel time.

**Less favoured**  
Politically disadvantaged areas.

**Weakly integrated**  
Areas not well connected, both physically and in terms of communication and markets.

Source: CPRC (2004).



## Subnational studies

At the subnational level, regional disparities in human well-being can be significant, even within relatively affluent countries. A recent analysis in Brazil found that per capita GDP in its richest region was nine times that in its poorest region in 2006.<sup>35</sup> A host of factors — including a limited natural resource base, frequent droughts and extreme inequality of land tenure — explain why Brazil's long-standing epicentre of poverty is its north-east region.

Regional disparities in MDG indicators are seen in the drylands of numerous countries. Ghana is a case in point. Although it was the first country in sub-Saharan Africa to achieve the target under MDG 1 (Eradicate extreme poverty and hunger) of halving the proportion of its population in extreme poverty, this considerable national achievement conceals significant regional discrepancies. From 1991 to 2006, the proportion of the population in extreme poverty declined in 8 of Ghana's 10 regions — in some by more than 70 percent. However, in the Upper West and Upper East regions, the driest and most remote parts of the country, the proportion of the population in extreme poverty actually increased over the same period.<sup>36</sup>

Unsurprisingly, Ghana's MDG Report notes that nutritional challenges are most pronounced in the country's dry northern regions. The proportion of children with wasting was highest in the three northernmost regions and the proportion of children with stunted growth was among the highest in the Upper East and Northern regions. Efforts to improve maternal health (MDG 5) are constrained by a lack of information on signs of pregnancy complications and limited access to basic laboratory services, particularly in the Northern and Upper West regions, where only 60 percent of pregnant women have access to urine testing in contrast to 90 percent at the national level. Ghana's northern drylands display all the characteristics outlined in Table 2.1: low natural resource potential, remoteness, and weak integration into the national economy in association with political marginalization.

Kenya's north-east areas also embody the characteristics presented in Table 2.1. North Eastern province is marked by arid and semi-arid savanna grasslands, bush and woodland dominated by pastoral and agropastoral livelihoods. The province has the country's highest poverty level: 70 percent in 2005/06, well above the national average of 46.6 percent.<sup>37</sup> North Eastern province also lags behind all other parts of the country in terms rural food poverty (MDG 1), several maternal care indicators (MDG 5), and access to safe water sources (MDG 7: Ensure environmental sustainability).

The difficulties of providing conventional education services to rural and predominantly pastoral areas are reflected in the poor performance of North Eastern province according to indicators for achieving universal primary education (MDG 2) and promoting gender equality and empowering women (MDG 3). Nationally, the net enrolment rate<sup>38</sup> in primary education in

<sup>35</sup> ECLAC (2010b) Chapter IV. The same study examined several Organisation for Economic Co-operation and Development countries and found per capita GDP in each country's richest region to be no more than twice the figure in the associated poorest region.

<sup>36</sup> Ghana (2010).

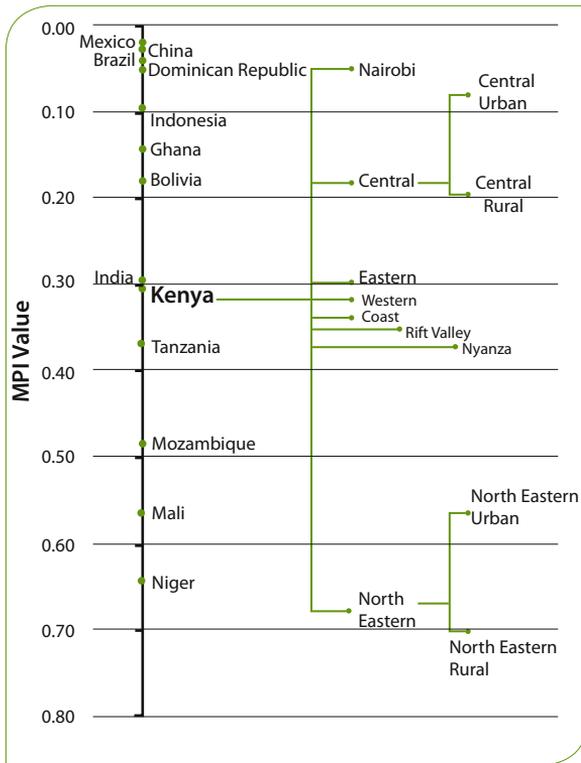
<sup>37</sup> Kenya (2010).

<sup>38</sup> The net enrolment ratio is the share of children of official primary school age who are enrolled in primary school.

Kenya rose steadily from less than 70 percent in 2000 to over 92 percent in 2008 but although the net enrolment rate improved in North Eastern province over the same period it stood at just 31.9 percent in 2008. Nearly 80 percent of pupils completed their primary education in Kenya in 2008, but in North Eastern province less than a quarter of all girls completed primary education and just over half of all boys. The north-east also had the lowest net enrolment rate at secondary school level in 2008, with boys at 10.2 percent and girls at 6.4 percent.

The Multidimensional Poverty Index (MPI), which assesses a range of deprivations at the household level, confirms that Kenya’s North Eastern province is its least developed.<sup>39</sup> Disaggregating the MPI across Kenya’s eight provinces reveals great variations within the country (Figure 2.3). The capital, Nairobi, has the same MPI value as the Dominican Republic, which ranks in the middle of the 104 countries analysed, whereas rural areas of North Eastern province have a lower MPI value than Niger, the poorest country in the study.

Figure 2.3 Multidimensional Poverty Index values in Kenya by region



Ghana and Kenya illustrate the web of factors leading to the prevalence of poverty in many rural drylands. Food security is frequently erratic, causing nutritional problems that damage adult health and the mental and physical development of children. Government provision of education and health services is typically poor and private sector providers are hard to attract due to low levels of effective demand. Remoteness and inaccessibility due to low quality infrastructure and high transport costs also affect health and education outcomes, restrict access to services, inflate food costs and reduce the chances of producers engaging with national and international markets.<sup>40</sup> In areas afflicted by desertification, these problems are compounded (see Box 2.2).

Source: Alkire and Santos (2010).

<sup>39</sup> Alkire and Santos (2010).  
<sup>40</sup> Bird et al. (2002).



### Box 2.2 The poverty–environment nexus in Uzbekistan

Uzbekistan's Aral Sea region is an extreme example of the mutually reinforcing links between poverty and environmental damage found in certain drylands. Unsustainable irrigation practices over the last 50 years have resulted in a dramatic desiccation of the Aral Sea, once the fourth largest inland lake in the world. The sea level has dropped by more than 23 metres, wiping out a once thriving fishing industry and exposing over 50,000 square kilometres of saline sea bed, now the source of salt and dust storms that contaminate crops and pollute natural vegetation. Desertification on cotton plantations is further exacerbated by salinization caused by poor irrigation practices.

The chronic shortages of clean water, in combination with historically high levels of pesticide use, contribute to poor maternal and child health, a high prevalence of respiratory and kidney diseases, and the country's highest incidence of tuberculosis. The economic disintegration of the region has led many inhabitants to leave in search of better living conditions.

Source: Uzbekistan (2006).

Regions of dryland poverty are typically characterized by high levels of risk, which the poor are often ill-equipped to cope with. These high risk levels stem from natural hazards such as disease and climate extremes (see Box 2.3), with harvest failure and/or livestock mortality common outcomes. They also apply to injury and illness, deterioration in terms of trade, reduced access to work, theft, insecurity and conflict.<sup>41</sup>

### Box 2.3 Extreme winter hazards in central Asia

Drought is a major natural hazard in the mid-latitude and high-plateau drylands of central Asia, but pastoralists in this region also contend with extreme winter weather known locally as *dzud*. A *dzud* occurs when extreme winter cold, snow and ice limit forage, threatening the survival of livestock.

The effect of these events on pastoral economies can be great. Between 1955 and 1990, six severe winters resulted in livestock losses of 20 to 30 percent each. The impact of extreme winter conditions may be magnified if they follow a drought. For example, the worst drought–*dzud* combination in Mongolia in recent times was from 1999 to 2001, when livestock mortality reached 8–10 million animals, approximately 30 percent of the national herd.

Source: Sternberg et al. (2009), Miller (2005).

## Conclusions

Numerous drivers influence the prosperity of an area and its people; the natural environment imposes just one set of controls. People may be also disadvantaged by age, gender, disability or ethnicity. Spatial disparities in growth and welfare arise for a variety of reasons, particularly market forces associated with economies of scale and the interplay of competing political interests, both of which frequently persist over time. The physical character of a place helps to parameterize its socio-economic achievements, but it does not define or limit them. Nonetheless, the location of poor people is important. Recognizing where the 'forgotten billion' live is a vital first step towards implementing policies that can help them rise out of poverty.

# 3. Overcoming the barriers to MDG achievements in drylands

The barriers to MDG achievement in rural drylands can be considered from several perspectives. The first perspective examines the key challenges and bottlenecks hampering national efforts to meet MDG targets in all areas, as these challenges also constrain achievements in drylands.<sup>42</sup> The second focuses on those challenges that are specific to drylands, in order to better address their causes. Finally, considering specific examples of welfare improvements in drylands can help shed light on how to overcome these barriers and scale up MDG achievements in the drylands and elsewhere.

## Common challenges and bottlenecks

A synthesis of evidence from individual countries on efforts to achieve MDG targets exposes several common challenges and bottlenecks that contribute to poverty in drylands. These constraints are common to both drylands and non-dryland areas. However, their impacts are often more severe in dryland ecosystems.

- **Structural shortfalls** are a critical factor in slowing progress towards the MDGs. Unresponsive institutions and poor implementation restrain economic growth and hamper basic service delivery, often aggravating disparities between regions or along the rural/urban divide (see Box 3.1).
- **Lack of capacity**, including the quality and quantity of personnel, constitutes another major obstacle to service delivery in numerous countries.
- **Inadequate resources** — a simple lack of finances — hinder many of the efforts towards meeting the MDGs.
- **Inadequate infrastructure**, particularly poor transport links that inhibit service provision and impede access to markets, is another common challenge.
- **Social attitudes**, many reflecting cultural differences, are barriers to the attainment of certain MDGs in some countries. In the drylands, variations in the attitudes and norms of nomadic and settled communities may be an issue. Differences in sociocultural attitudes also help explain gender and geographic disparities in poverty levels.<sup>43</sup>

<sup>42</sup> UNDP (2010b).

<sup>43</sup> UNDP (2010b).



- **Distinct vulnerable groups** that may be marginalized, even among the poor, can present a challenge to national development agendas. In Botswana, destitute people, orphans and other at-risk children are examples of particularly vulnerable groups.<sup>44</sup>
- **Poor data and monitoring mechanisms** are difficulties confronting all MDGs and their targets to varying degrees. Subnational differences are often inadequately quantified due to a lack of statistical information on smaller territorial areas, such as municipalities. Data quality is mentioned in some Country Reports, such as Kyrgyzstan, which cites differences between official statistics and the 'real situation' on the ground for certain MDG indicators.<sup>45</sup>
- **Conflicts and disaster-related challenges**, while sometimes transitory, complicate many of the more pervasive challenges and bottlenecks.<sup>46</sup> Some of these challenges may not be transitory and can overwhelm the national capacity to achieve MDG targets (see Box 3.2). The propensity of some drylands to be a focus for insecurity and conflict relates to the driving forces that contribute to their perceived remoteness and high levels of risk. In 2007, for instance, 80 percent of major armed conflicts worldwide occurred in drylands.<sup>47</sup>
- **New and emerging challenges** have also materialized as hurdles to achieving the MDGs in many countries. Prominent among these are the sharp shocks of the global food price and financial crises (see Box 3.3), and the gradual onset of changes wrought by climate change.

### Box 3.1 Structural weaknesses and capacity shortfalls in Botswana

Even the most promising policies and plans are ineffective without the responsive institutions and trained personnel necessary to implement them. The Botswana Country Report highlights several weaknesses in these areas. For example, acute respiratory infections and water-borne diseases remain leading causes of morbidity and mortality among children despite being preventable and treatable. The prime reasons are 'a lack of comprehensive training on the protocols of childhood disease management and insufficient follow-up and supervision of health care providers'. Similarly, the country's high HIV rate among women of reproductive age makes an increase in numbers and capacity of health staff 'the most formidable challenge in maternal health facing Botswana today'.

The distribution of workers is another structural weakness in Botswana. In 2009, as many as 300 trained teachers graduated without a job, yet Botswana struggles to staff remote schools. The challenge of improving access to education in remote areas is further exacerbated by the long distances pupils are often required to travel. A policy aimed at reducing the travel barrier by building more schools has been slow to progress due to lack of implementation capacity.

Source: Botswana (2010).

<sup>44</sup> Botswana (2010).

<sup>45</sup> Kyrgyzstan (2010).

<sup>46</sup> UNDP (2010b).

<sup>47</sup> Gnacadja (2010).



### Box 3.2 Conflict and the MDGs in Somalia

Countries in conflict are among the worst MDG performers, frequently regressing on key indicators. The direct impacts of warfare — measured in casualties, injuries and mass migrations — are accompanied by a weakened economy and government capacity, damaging the prospects of achieving the MDGs. Development failures can be both a cause and a consequence of conflict, pushing countries into a downward spiral. Adverse effects are seldom confined within national boundaries: impacts are often felt regionally, if not further afield.

In Somalia, most central and southern regions have been without an effective central government since 1991. Since then these areas have struggled with civil war, sporadic droughts and continuous food insecurity. Unsurprisingly, there are no reliable national-level data covering this time. Remarkably, despite the years of violent conflict and institutional decline, a series of Child Health Days have registered some success towards reducing child mortality (MDG 4) and combating disease (MDG 6). International humanitarian agencies supply hundreds of local field teams that deliver regular immunizations against measles, diphtheria, whooping cough, tetanus and polio. Somalia has been free of polio since March 2007.

Source: Stewart (2003), UNICEF/WHO (2009).

### Box 3.3 Burkina Faso and the global economic crisis

Burkina Faso lags behind much of the rest of sub-Saharan Africa in its slow pace towards meeting the MDGs and is close to the bottom of the Human Development Index (173 of 179 countries). It has a very high birth rate — on average each woman gives birth to 6.1 children — so extending basic public services is extremely costly. In addition, in September 2009 the country was pummeled by severe floods. On top of all this, the world economic crisis has had dire consequences for Burkina Faso, most notably via the cotton industry. Approximately 250,000 households, or 3 million people (out of a population of 15 million), depend either directly or indirectly on cotton production for their livelihoods. The cotton sector accounted for 60 percent of export revenues in 2009. The decline of global demand for cotton meant that the price of cotton fell by 40 percent, with a consequent marked downturn in domestic economic growth. This may be exacerbated by some donors reducing their aid budgets, by a reduction in foreign direct investment, and by a hike in the cost of food.

Source: Stuart (2010).

These challenges and bottlenecks are not limited to drylands. However, in many cases the policies designed to tackle these issues should be viewed through a dryland lens because important aspects may be specific to drylands. These challenges that in combination are special to drylands can be categorized according to four groups:<sup>48</sup>

- **Sociocultural challenges** are varied but many stem from the rapid increases in human population that characterize certain dryland regions, and the importance of mobility to numerous dryland communities. Population growth magnifies MDG challenges and may exacerbate resource-related conflicts, although the relationship between population density and natural resources is not straightforward.<sup>49</sup> Nomadic lifestyles present

<sup>48</sup> UNDP (2007).

<sup>49</sup> The Machakos District in Kenya is frequently cited as an area where rapid population growth has been accompanied by sustainable environmental management, facilitated by market development and a fundamental transformation in farming practices (Tiffen et al., 1994). See also the example of reforestation programmes in southern Niger later in this chapter.



difficulties for service provision, as does the internal and cross-border migration that is so widespread even among settled dryland dwellers. In many countries, mobility is rarely well incorporated into policy.

- **Economic challenges** to dryland development are also varied but poverty is the most significant, particularly in Africa and South Asia. Principal among the numerous factors that contribute to dryland poverty rates are their marginalization in investment decisions at the political level, poor markets and the inadequate infrastructure.
- **Climatic and ecological challenges** that typify drylands are largely a function of water resources. The sporadic availability of water, including the impacts of drought, not only presents direct livelihood challenges but also drives other aspects of the dynamic natural resource base that so many dryland inhabitants rely upon.
- **Policy and institutional challenges** reflect the overarching consensus that dryland communities are marginalized politically. This translates into limited influence in shaping development narratives and policies, and prolongs the economic and welfare imbalances.

These four dryland-specific categories of development challenges must inform national strategies, policies and interventions to accelerate MDG achievement. Examples of success stories where countries have overcome these obstacles can inform progress in drylands elsewhere, as discussed below.

## MDG progress in drylands

Although dryland populations are often among the poorest, many have benefited from progress towards the MDGs. Some of the cases discussed here highlight how dryland-specific constraints were overcome. Others illustrate how more generic issues were surmounted in dryland contexts.

Many countries have made remarkable progress towards universal primary education (MDG 2). In sub-Saharan Africa the share of children who entered school at the official school entrance age increased by 25 percent between 2000 and 2007. In several countries with significant proportions of their territories in the drylands — including Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Mozambique and Tanzania — the abolition of school fees at the primary level led to enrolment surges. Tanzania experienced one of the largest net enrolment increases: between 1991 and 2006 the net enrolment ratio rose from just over 50 percent to over 96 percent.<sup>50</sup>

Other proven interventions include investment in school infrastructure, improved teacher recruitment and distribution of free or subsidized textbooks. In Burkina Faso, a focus on public-private partnerships helped increase available classroom space by almost 8 percent per year between 2000 and 2007.<sup>51</sup> Improvements in education can support progress towards other MDGs, as the example of Syria shows (see Box 3.4).

<sup>50</sup> UNDP (2010a).

<sup>51</sup> Burkina Faso (2010).

### Box 3.4 Education and child health in Syria

Education underpins the entire set of MDGs. For example, analysis of the causes of child mortality in Syria in 2008 showed that 77 percent of mothers whose children had died before reaching their fifth birthday were illiterate or had not completed primary education. Immunization coverage was also significantly lower for children of less educated mothers. Many factors influence child mortality, but education enhances a mother's ability to ensure better care for her child, makes her more aware of hygiene and nutrition issues, and increases her capability of benefiting from available health services.

Source: Syria (2010).

Retention of pupils remains a problem in many countries, but it is being successfully addressed in some cases. In Egypt, the Girls Education Initiative targets the neediest rural girls. Launched in 2003, the scheme created 'girl-friendly' schools that are carefully designed to overcome many of the barriers that deprive girls of education. Facilities are located as close as possible to pupils' homes, with primarily female teachers and class hours that allow the girls to perform their household chores before going to school. Schools are built with community participation to ensure that they are not seen as an implant by outsiders,<sup>52</sup> a challenge related to the perceived remoteness and exclusion from mainstream society common to many dryland communities. Egypt's Girls Education Initiative has also made significant progress in eliminating gender disparities in education, a target for MDG 3.

Innovative approaches to delivering MDG services have tackled other challenging features of remote, dryland communities. Ethiopia, for example, designed a mobile schools programme to provide access to primary education to migratory pastoralist communities, particularly in its Afar and Somali regions where enrolment ratios are well below the national average.<sup>53</sup> Such programmes have a long history in some dryland areas (see Box 3.5).

### Box 3.5 Tent schools in Iran

A system of tent schools has operated successfully for more than 50 years among the Qashqa'i nomadic pastoralist in Iran. The system, which has grown to include elementary schools, a teacher training school, a middle school, a high school and a carpet weaving school, uses a standard curriculum that recognizes nomadic pastoralists are cultural resources.

Teachers from mobile pastoralist families are trained and equipped with a school tent and educational materials, and join a group of pastoralist households to teach a mixed-age class. Classes are co-educational, unlike most schools in Iran, but girls remain under the close supervision of their parents. The scheme has contributed to improved development outcomes in several areas for the Qashqa'i, including literacy, gender equality, disease management and social mobility.

Source: Shahbazi (2006), Schelling et al. (2008).

Mongolia has successfully incorporated mobility into health service provision and outreach activities for its remote and vulnerable populations. Mongolia's support to the Third National Reproductive Health Programme promotes mobile reproductive health services that have

<sup>52</sup> Sultana (2008).

<sup>53</sup> Ethiopia (2010).



helped lower the maternal mortality rate from 69.7 per 100,000 live births in 2006 to 49 per 100,000 live births in 2008. Mongolia's 'telemedicine' approach for maternal and newborn health may be relevant to other countries that are challenged by vast distances and underdeveloped roads in dryland areas.<sup>54</sup> Welfare improvements can be greater still if public health services to mobile peoples are combined with veterinary services, which makes sense economically and logistically in areas where resources are scarce (see Box 3.6).

### Box 3.6 Combining human and animal vaccination for nomadic families in Chad: A 'One Health' approach

Collaboration between public health and veterinary services increases essential health interventions for people and livestock in remote parts of rural Chad. The programme employs a transdisciplinary approach, combining scientific and local knowledge to improve understanding of the health priorities of nomadic pastoralists and identify clear synergies between public health and veterinary services. Veterinary services play a crucial role in controlling highly contagious diseases and zoonotic infections, which can spread from animals to humans. Eliminating major diseases (MDG 6) has synergistic effects in supporting progress in numerous other MDGs.

The interconnections between human, animal, and environmental health form the basis of the 'One Health' approach. Integrated policy interventions can simultaneously target multiple, interconnected causes of poor human health (e.g. unsafe and scarce water, lack of sanitation, food insecurity, close proximity between people and animals) and can yield significantly larger health benefits than individual policies targeting each factor in isolation.

Source: Schelling et al. (2005), UN (2008).

Although significant outside interventions contribute to numerous cases of MDG achievement in drylands, many local efforts using simple, low-cost technologies also produce results. In southern Niger, large-scale reforestation programmes have been implemented almost entirely through the efforts of poor farmers managing natural tree regeneration on their agricultural land. These programmes contribute to ensuring environmental sustainability (MDG 7) along multiple pathways in a region where drought and desertification pose persistent threats. By conserving trees on their agricultural plots, farmers benefit from the natural fertilizer provided by falling leaves, resulting in higher crop yields. They also access extra income through the sale of tree products, contributing to food security and poverty reduction. The programmes were encouraged by changes in local laws that transferred ownership of trees to farmers. Notably, this widespread reforestation occurred during a period of rapid population growth. Some of the highest tree densities are in areas of high rural population density, contradicting the notion that land degradation is attributable to population growth.<sup>55</sup>

## Lessons from the 'BRIC' countries

Of the four emerging global powers referred to as the 'BRIC' countries (Brazil, Russia, India and China), all but Russia have significant dryland areas. These large and rapidly growing market economies can provide lessons for other countries with drylands, although the application of those lessons may be limited by several factors, including difference in scale.<sup>56</sup>

<sup>54</sup> UNDG (2010) Chapter 3.

<sup>55</sup> Reij et al. (2009).

<sup>56</sup> Brazil, India and China are among the world's top 10 countries in land area and population.

The most dramatic reduction of poverty rates in recent decades occurred in China, where a policy focus on agriculture was a driving force behind the drop in poverty levels. Between 1981 and 2001 the proportion of the population living in poverty dropped from 53 to 8 percent.<sup>57</sup> Most of this reduction is attributable to targeted interventions in rural areas, where land rights reform was the key agricultural measure, supplemented by a rise in government procurement prices and subsidies on agricultural inputs including fertilizers and seeds.<sup>58</sup>

An allied effect of the agricultural reforms in China was the creation of the rural non-farm sector, which provides employment and income to millions of people whose labour is no longer needed in farming. The rural non-farm sector also benefited from infrastructural development. For the predominantly dryland western parts of China, the most effective incremental expenditures were on agricultural research and development, education, roads and electricity.<sup>59</sup>

The growth of rural non-farm employment, with its significant dependence on infrastructure services, has also been an important source of household poverty reduction in India, where areas with relatively high literacy rates enjoyed significantly improved prospects for pro-poor growth.<sup>60</sup> Nonetheless, investments in agricultural research and development, by both the public and private sectors, contribute to improving food security and generating income for small farmers in India's drylands (see Box 3.7).

### Box 3.7 Improved cereals for India's drylands

Most of India's poor are concentrated in drylands. Long-term public investment in improving cereal varieties followed by private sector involvement led to a significant reduction in dryland food insecurity. National average yields of sorghum and pearl millet, which are primarily grown in India's arid and semi-arid regions, increased by up to 85 percent over the last four decades, and nearly 80 percent of the areas producing these crops now cultivate high-yielding varieties under rain-fed conditions.

The yield increase allows farmers to grow the same amount of food on half the land, often switching the remainder to cash crops. The improved crops contribute to food security because they are considerably more resistant to drought than other major food grains. Further, the improved varieties benefit poor consumers because the wealthy tend to eat rice or wheat. Most of the benefits from the improved hybrid varieties go to farmers rather than to the seed companies, but the size of the market means that private companies can make sufficient profits to encourage investment in developing new cultivars for small farmers in regions that lack irrigation.

Source: Pray and Nagarajan (2009).

Poverty reduction and economic growth are interconnected,<sup>61</sup> as confirmed by the slowing of MDG progress during the international financial and economic crisis of 2007–2008. Nevertheless, Brazil's experience in recent decades indicates there is a lot that governments can do to alleviate poverty even during economic slowdowns. A major influence on Brazil's modest poverty reduction between 1985 and 2004 was the expansion in social security and

<sup>57</sup> Ravallion and Chen (2007).

<sup>58</sup> Montalvo and Ravallion (2010).

<sup>59</sup> Fan et al. (2002).

<sup>60</sup> Ravallion and Datt (1999).

<sup>61</sup> Dollar and Kraay (2002), Lopez (2004).



social assistance spending by the federal government,<sup>62</sup> notably the *Bolsa Escola* and *Bolsa Família* conditional cash transfer programmes.

Latin America pioneered conditional cash transfer programmes as a targeted approach to poverty alleviation. These programmes are equally effective in drylands and other deprived areas.<sup>63</sup> They aim to raise family consumption levels through monetary transfers and thereby reduce poverty in the short term, while better positioning family members to break the intergenerational transmission of poverty. This is achieved by conditioning the financial benefits on greater use of health and education services. Following the introduction of the first government-sponsored conditional cash transfer system in rural Mexico in 1997, similar programmes were introduced in 14 countries in Latin America and the Caribbean. The Mexican experience shows that it is feasible to carry out a large-scale, targeted conditional cash transfer programme even in poor and remote areas with few services.<sup>64</sup>

## Conclusions

Drylands have witnessed impressive, if isolated, accomplishment in national development agendas, particularly with respect to the health- and education-related MDGs. Experiences in Brazil, India and China confirm that innovative, targeted programmes can combat poverty even in the most marginalized areas.

The challenges and bottlenecks highlighted in this chapter obstruct efforts to meet MDG targets more broadly, in drylands and elsewhere. The sociocultural, economic, climatic, and political and institutional challenges particular to drylands require tailored responses based on a defined dryland strategy. Identifying and addressing the building blocks of such a strategy will help countries to unlock the full potential of drylands and move closer to achieving the MDGs.

<sup>62</sup> Ferreira et al. (2010).

<sup>63</sup> The public employment programme is another type of targeted intervention that works equally well in dryland and non-dryland rural areas. See Chapter 5 for details of India's National Rural Employment Guarantee Act of 2005, for example.

<sup>64</sup> UNDG (2010) Chapter 1.



## 4.

# Identifying the building blocks of a successful dryland strategy

Unlocking the potential of the world's drylands will be a complex process. Nevertheless, critical building blocks for a successful strategy can be drawn from experiences to date in these areas. Key factors have helped to combat poverty in certain drylands, and can help governments, donors and private investors achieve greater impact from their investments. Among these factors, two fundamental shifts in thinking are particularly important. First, the interaction between human society and the operation of nature should be reconceptualized in line with the integrated approach advocated by the Drylands Development Paradigm. Second, natural systems should be properly evaluated, particularly in economic terms: most current methods for assessing dryland ecosystem services are far from comprehensive.

The building blocks discussed below can support an integrated dryland strategy that enhances the economic and social well-being of dryland communities and enables them to sustain their ecosystem services while strengthening adaptive capacities to manage environmental change.

## Upgrading the knowledge base and improving governance

Failure in dryland development programmes are often attributable to a lack of appropriate knowledge, frequently compounded by governance and institutional structures that prevent relevant knowledge from reaching decision makers. Women and the poor suffer considerably in this bottleneck, reinforcing their marginalization.<sup>65</sup> Acceleration of progress towards the MDGs requires an upgraded and broadened knowledge base. Knowledge sharing should be advanced via improved knowledge management, and the linkages between science, policy and development practice should be enhanced with appropriate and effective governance approaches.<sup>66</sup>

New approaches to dryland development aim to harness the expertise of dryland communities and apply it more broadly (see Box 4.1). The success of these approaches, particularly at the local level, is vital to the delivery of more effective, inclusive and sustainable outcomes.<sup>67</sup>

<sup>65</sup> Kameri-Mbote (2005).

<sup>66</sup> Weeks et al. (2003).

<sup>67</sup> UNDP (2010), ECLAC (2010a).



Participatory approaches are often more risk-aware and context-sensitive, leading to greater cost effectiveness over the long term. However, they may also be more complex, time- and cost-intensive, and reliant upon sufficient decentralization and transfer of resources.

#### Box 4.1 The World Overview of Conservation Approaches and Technologies

The World Overview of Conservation Approaches and Technologies seeks to improve the knowledge base underpinning sustainable land management (SLM) by collating information on the application of SLM approaches from across the globe. Standardized tools and methods are used to compile and evaluate biophysical and socio-economic information and knowledge from multiple stakeholders, allowing SLM case studies to be assessed, compared and distributed more widely. Land managers can share their experiences and search for appropriate SLM technologies and approaches that have been successful elsewhere, contributing directly to MDG 7: Ensure environmental sustainability.

Source: Liniger et al. (2004), WOCAT (2007), Schwilch et al. (2009).

The Drylands Development Paradigm further contributes to an improved understanding of dryland challenges.<sup>68</sup> The Drylands Development Paradigm proposes an integrated approach to understanding dryland dynamics and the nature of development interventions, highlighting the co-dependency and co-adaptations of human and biophysical elements. It distinguishes between the 'slow' and 'fast' variables that drive change in human and environmental spheres. Slow variables include soil development, geomorphological change, institutional evolution and cultural changes, while fast variables include crop production and disposable household income.

Development interventions tend to focus on the fast variables, which operate at timescales more amenable to governments, donors and dryland populations. However, it is the slow variables that determine the direction of change over time. The MDGs are useful milestones on the road to long-term sustainability, but governments and donors must juggle both long- and near-term goals and trade-offs. The Drylands Development Paradigm can help make these distinctions and identify priorities. A suitable balance must be reached between short-term actions to accelerate progress towards the MDGs and longer term policy options to address the more deep-seated systemic development challenges faced by drylands.

Scientific research can inform policy options and reduce unnecessary risk-taking. Some research uses tools such as scenario planning to help identify opportunities and threats and orient socio-ecological systems towards more sustainable futures.<sup>69</sup> Such scenarios can include knowledge and information from multiple disciplines and stakeholders, promoting inclusiveness.<sup>70</sup> In addition, empirical research on climate change, adaptation, and sustainable land management should be communicated both horizontally and vertically. Transparent, two-way information flows are vital in helping stakeholders to make informed decisions.<sup>71</sup>

<sup>68</sup> Reynolds et al. (2007).

<sup>69</sup> Enfors et al. (2008).

<sup>70</sup> Kok et al. (2007).

<sup>71</sup> Rowe and Frewer (2005).

Improved knowledge management can increase drylands' visibility in national development plans and enhance the mainstreaming of core dryland concerns and cross-cutting MDGs such as gender equality and education.<sup>72</sup> Civil society organizations play an important role in helping to accelerate progress towards multiple MDGs via the promotion of often small-scale success stories. Many of these cut across poverty and hunger reduction, gender empowerment, education, health and environmental sustainability concerns (see Box 4.2).

#### Box 4.2 Drynet

Drynet ([www.dry-net.org](http://www.dry-net.org)) is a networking and capacity-building initiative involving 14 civil society organizations from across the globe that document and share successful initiatives.

One such initiative is an egg production cooperative established by six women from villages in Mpumalanga Province, South Africa, a semi-arid area struggling with poverty, food insecurity and malnutrition. The cooperative produces eggs for sale and consumption by members' families, providing a reliable source of protein. Members also grow vegetable using simple water-wise technology. In addition to improved food security and nutrition, the cooperative contributes to income generation, poverty alleviation, skills transfer and capacity building. The spread of successful small-scale initiatives such as the egg cooperative is vital in accelerating progress towards the MDGs, particularly those focused on ending poverty and hunger, and ensuring child health and environmental sustainability.

Source: [www.dry-net.org](http://www.dry-net.org).

## Re-evaluating and sustaining dryland ecosystem services

MDG progress can also be accelerated through the re-evaluation and sustainable management of dryland ecosystem services. Although the economic importance of environmental services such as soil formation, nutrient and water cycling, photosynthesis and primary production is often invisible in national accounting,<sup>73</sup> their contributions to food production in drylands are paramount. Similarly, the contribution of dryland ecosystems to pastoral herding is commonly underestimated because often only sales of livestock products are recorded. In reality, rangelands support livelihoods based on subsistence, breeding and marketing goals.<sup>74</sup> Available estimates show that pastoralism contributes significantly to the GDP of dryland developing country economies. About 10 percent of GDP in Mali, 20 percent in Kyrgyzstan, and 30 percent in Mongolia derive from pastoralism.<sup>75</sup> In these countries no other drylands production system is more productive or supports as large a population. Indeed, pastoralism remains the only viable option for many rural dryland populations.

Drylands play an increasingly important role in meeting world food needs.<sup>76</sup> At the local level, the inherent heterogeneity and biodiversity of dryland ecosystems remains vital, especially in times of stress. A study of drought periods in dryland India found wild foods contributed between 42 and 57 percent of total income.<sup>77</sup> Spatial patterns of water, nutrients, biodiversity and productivity vary considerably even over relatively short distances in drylands.<sup>78</sup> The

<sup>72</sup> Akhtar-Schuster (2011).

<sup>73</sup> National accounting considers the total economic activity of a nation in terms of both income and output.

<sup>74</sup> Mortimore et al. (2009).

<sup>75</sup> WISP (2008).

<sup>76</sup> Stringer (2009).

<sup>77</sup> Koziell (2000).

<sup>78</sup> Rietkerk et al. (2000).



resulting resource mosaic has long been exploited by local communities through their indigenous knowledge and land use systems. Patterns of pastoral mobility underpin local adaptive capacities and should be supported with appropriate policies to advance progress towards the MDGs, particularly in view of climate change threats.

Dryland forests<sup>79</sup> support livelihoods in a number of ways, many of which are also poorly accounted. While fuelwood and charcoal represent the most obvious forest use values, an extensive range of products are harvested from trees and shrubs, both in forests and on farms.<sup>80</sup> National accounting should strive to capture more appropriately input costs and nature's contribution to these services, as well as the costs of sustainable management of these resources.<sup>81</sup> This is vital if current deforestation trends are to be reversed.<sup>82</sup>

Accounting frameworks should also consider gender inequalities. Labour divisions in drylands are often gendered and women undertake many of the household tasks, including wood and water collection and food provision. In degraded environments, these tasks become more time-consuming, adding to the burden on women and girls. More sustainable management of dryland ecosystem services and consideration of their gendered costs and benefits are needed.

Many other dryland ecosystem services could be harnessed more effectively to accelerate progress towards the MDGs. Solar, wind and bio-energy are areas of growing investment as governments strive for low-carbon economic development (see Box 4.3). Carbon markets created through the United Nations Framework Convention on Climate Change and its Kyoto Protocol offer the opportunity for investment in projects that remove carbon dioxide or reduce greenhouse gas emissions. At a smaller scale, payment for ecosystem services schemes in which providers are paid to undertake specific land uses<sup>83</sup> offer attractive opportunities, particularly to encourage more sustainable management of biodiversity and enhance carbon sequestration. Dryland forests are particularly important for carbon storage and can be incorporated into payments for ecosystem services.

<sup>79</sup> Forests and woodlands occupy about 18 percent of drylands according to the Millennium Ecosystem Assessment, most in the more humid areas (Safriel et al. 2005).

<sup>80</sup> Vedeld et al. (2007).

<sup>81</sup> Mortimore et al. (2009).

<sup>82</sup> ECLAC (2010a).

<sup>83</sup> Engel et al. (2008).



### Box 4.3 Biofuel crops in Malawi

Non-governmental organizations, the private sector and governments are promoting biofuel crops across dryland Africa through a variety of investment structures. Investments by Environment Africa, a non-governmental organization, aim to reduce deforestation in Malawi by providing alternative incomes and energy sources for villagers who rely on forest reserves for charcoal production. *Jatropha curcas* is grown as boundary fences around homesteads and oil from its seeds is used to make soap and paraffin for home use. *J. curcas* is thought to improve soil quality and reduce erosion while generating carbon storage benefits, provided sequestration is greater than in the ecosystem the crop replaces. It can also tolerate drought and has low soil nutrient requirements.

Commercial farms buy *J. curcas* seeds from local farmers, providing a supplementary income source. The resulting biofuel is used to power farm machinery. Larger scale biofuel plantations provide employment opportunities for local people and a knowledge base for transferring *J. curcas* cultivation practices from the estate to the homestead. *J. curcas* clubs also encourage knowledge exchange among villagers.

These initiatives provide returns to investors across economic, environmental and social spheres and create benefits at a range of scales, supporting progress towards multiple MDGs. However, concerns remain that the poor may not benefit equitably from some schemes and that the rights of local people receive insufficient consideration.

Source: Favretto and Dyer (2010).

## Promoting public and private investment in drylands

Primary agricultural production is the mainstay of millions of dryland livelihoods. Promotion of private investment in climatically appropriate agro-based industries can reduce dependency on primary products as dryland countries diversify into value-added exports via small-scale industrial initiatives and improved access to more profitable markets. This can encourage both specialization and diversification of household agricultural portfolios, with new agricultural products supporting poverty reduction and inclusive growth.<sup>84</sup> These investments can directly contribute to Target 2 of MDG 8 (Develop a global partnership for development) and the development of a non-discriminatory trading system that accounts for gender disparities. They can also assist in the conservation of biodiversity (see Box 4.4).

<sup>84</sup> Way (2006).



#### Box 4.4 Vicuña conservation and international fibre markets

A form of community-based wildlife management of the vicuña, a camelid species native to the Altiplano-Puna dryland plateau of South America, has managed to access lucrative international luxury fashion markets for the vicuña's highly prized fibre. Once hunted to the brink of extinction, wild vicuña are now protected and local communities allowed to capture, shear and release them because commercial farm management is virtually impossible. The capture and release system mimics the ancient Inca method of harvesting vicuña fleece.

Vicuña fibre is produced mainly by extremely poor rural Andean communities and its sale has contributed to the improvement of local livelihoods. However, poor dryland communities are just one group of stakeholders in the vicuña fibre production chain, sharing the profits with traders and international textile companies. Vicuñas overlap their range with domestic livestock, resulting in conflict over the use of rangelands, so sufficient economic incentives are important. The inhabitants of South America's high-altitude drylands would have greater incentives to conserve vicuñas, and benefit more from harvesting the fibre, if their communal rights to land and wildlife were given proper legal protection.

Source: Lichtenstein (2010).

A focus on improving agricultural productivity in drylands can help accelerate progress towards MDG targets for poverty reduction and hunger (MDG 1). A recent review of 22 Poverty Reduction Strategy Papers and 21 policy frameworks of bilateral programmes revealed that the environment, hunger and nutrition and access to technology tend to be neglected,<sup>85</sup> yet these issues often inhibit MDG achievement. To attract private sector investment, public expenditure on core physical infrastructure is necessary. These investments can support improved agricultural growth as well. For example, investments in improved technology, rural roads, electricity and education in semi-arid parts of India contributed to agricultural growth and poverty reduction. As investments in irrigated areas continue to increase, their marginal returns diminish,<sup>86</sup> suggesting that it is the drier rain-fed areas where the marginal returns from additional investments in infrastructure were largest.<sup>87</sup>

The education and health sectors are also ripe for increasing investment growth.<sup>88</sup> In the Arab region, where most countries are predominantly dryland, investments in skilled health personnel led to significant reductions in maternal mortality ratios, an indicator for MDG 5 (Improve maternal health). By 2005 the maternal mortality ratio in the Arab region had decreased 34 percent from its 1990 levels.<sup>89</sup>

Rapid advances are also possible through interventions such as public employment programmes and novel social assistance schemes.<sup>90</sup> These types of intervention show some success, although they should be tailored specifically to the livelihood context of vulnerable populations. In East Africa, social assistance programmes designed for sedentary populations

<sup>85</sup> Fukuda-Parr (2008).

<sup>86</sup> Marginal return refers to the additional output resulting from a one unit increase in the use of variable inputs, while other inputs are held constant.

<sup>87</sup> Fan et al. (2000).

<sup>88</sup> Anderson et al. (2004).

<sup>89</sup> ESCWA (2007).

<sup>90</sup> UNDP (2010a).

were ineffective when extended to mobile, pastoral populations, because pastoralists draw on different informal social protection mechanisms and safety nets (based on religious, clan or family ties) in times of stress.<sup>91</sup> Careful targeting of adaptive social assistance mechanisms is essential.

By 2020, almost half the population in Africa is expected to live in urban areas.<sup>92</sup> Growing dryland cities generate increasing demand for rural produce. However, for urban growth to spur progress towards the MDGs, additional mechanisms may be required in the form of favourable market incentive structures and market-based risk mediation measures, including subsidies, insurance and futures price contracts.<sup>93</sup> In African and Asian countries with significant dryland regions, increased urbanization brings monetization of the local economy and improved possibilities for trade as new doors open for commercial investment in technology development, credit provision and banking, service delivery, cell phone networks and transport provision. Indeed, mobile phones are now a vital tool for livestock traders on the Kenya/Somali border, improving trade with enhanced information flows on market conditions, security and road accessibility.<sup>94</sup>

## Rights, reform, risk and resilience

Land rights and their reform underpin many MDG-related successes, particularly those connected to eradicating poverty, achieving sustainable urban and rural development and securing fundamental human rights. Land rights determine who can access particular dryland resources, how this is decided, the security of rights, and how conflicts are resolved. They also affect people's well-being through impacts on food security, incentives for investment in agriculture, the involvement of marginalized groups and the sustainable management of natural resources.

Accelerating progress towards environmental sustainability (MDG 7) in the drylands, as well as progress towards equality and poverty reduction, requires a rights-based approach to managing new land legislation that accommodates customary practices and respects livelihood security. An innovative example of such an approach is the 1998 decision by 15 member states of the Economic Community of West African States to allow the cross-border movement of livestock, which is critical for the maintenance of high pastoral livestock productivity. These movements are authorized by granting an International Transhumance Certificate that controls the departure of pastoralists from their home countries, assures the health of local herds, and informs the populations of 'welcoming areas' of new arrivals. The rights of non-resident mobile herders are protected by legislation in the host countries.<sup>95</sup> Careful attention to appropriate rights can also help defuse conflicts between pastoralists and settled farmers, as shown in Sudan (see Box 4.5).

<sup>91</sup> ODI (2009).

<sup>92</sup> Rosegrant et al. (2001).

<sup>93</sup> IAC (2004).

<sup>94</sup> Mahmoud (2009).

<sup>95</sup> Hesse and Cavanna (2010).



#### Box 4.5 Reduction of resource-based conflicts among pastoralists and farmers in Sudan

Severe droughts and the expansion of mechanized farming has exacerbated historical tensions between nomadic herders and farmers over land and grazing rights along pastoral corridors in dryland Sudan. A four-year initiative focused on drought-prone areas has addressed some of the root causes of these tensions. The project's achievements include:

- demarcation and mapping of livestock routes with concrete posts and introduction of local patrolling teams comprising representatives of pastoralists, farmers and native administration;
- formulation of 30 community resource management bodies;
- training schemes for local mediators in natural resources management and conflict resolution; and
- sponsorship of numerous local radio messages on pastoralism issues and land tenure, and a weekly radio magazine specializing in peace, conflict and pastoralists' affairs and sound management of natural resources.

Source: UNDP Sudan (2010).

Land tenure and policy reforms are most successful when they build upon wider natural resource management and income generation programmes, involve a broad range of stakeholders from multiple sectors, and link programme activities to policy reforms already underway.<sup>96</sup> For example, with assistance from the Global Environment Facility's small grants programme, UNDP helped strengthen an organization of female babaçu nut gatherers in Brazil.<sup>97</sup> While the project focused on linking biodiversity and income generation, it helped the group successfully advocate for legislation protecting their rights to harvest in privately-owned areas, thus securing their livelihoods into the future.

Successful management of the inherent risks stemming from variability in dryland natural environments is also a crucial precursor for sustainable development. A decentralized scheme designed to provide a safe and reliable supply of water to rural communities in dryland north-eastern Brazil is described in Box 4.6.

#### Box 4.6 The Programme of a Million Cisterns in north-eastern Brazil

Increasing the efficiency of use of sporadic resources must be a prime objective of any scheme that aims to improve a community's resilience to dryland variability. Water scarcity, including periodic long and severe droughts, is one of the critical challenges facing communities in the semi-arid northeast of Brazil, so the provision of a safe and reliable supply of water is vital. Since 2003, the Programme of a Million Cisterns has worked towards a supply of safe and drought secure drinking water for 1 million rural households — about 5 million people — in the area using a low-tech approach to managing rainwater.

The programme, initiated by several civil society organizations, receives funding from both government and the private sector. It uses a community-based participatory approach, assisting families to build their own cisterns to collect rainwater. By the end of July 2010, nearly 290,000 cisterns had been constructed and the initiative has generated employment and income, helped to lighten the domestic workload for many women and enabled more children to attend school. The number of people suffering from diseases related to contaminated water has also decreased

Source: Gnadlinger (2008), ASA Brasil (2010).

<sup>96</sup> UNDP (2008a).

<sup>97</sup> Babaçu forest grows on the margins of the dry savanna areas of north-eastern Brazil.

## Conclusions

Pursuing sustainable development in drylands, as in any area, should be a carefully balanced operation based on a sound understanding of how the physical environment works and how people interact with it. To maximize the benefits and opportunities that drylands offer, the relationships between human society and the operation of nature should be approached in an integrated manner. Dryland-oriented interventions should fit squarely within the Dryland Development Paradigm. This approach fully recognizes the complex and interdependent co-evolution of humans and ecosystems, and focuses on the long-term variables that drive change. While short-term variables such as household income and crop production tend to draw the most attention from governments and donors, it is the long-term variables such as institutional evolution and cultural change that will ultimately sustain progress.

Indigenous knowledge can play an important role in an improved understanding of dryland ecosystems and can help close the gap between science and development. Dryland inhabitants possess valuable first-hand knowledge about local ecosystems, often developed over generations. Integrating this knowledge as appropriate, and closely examining the coping strategies developed by dryland peoples, should feature in efforts to upgrade the knowledge base needed to support development gains.

It is essential that policies aimed at improving lives in the drylands acknowledge the importance of land rights, particularly issues related to common property, land use planning and zoning, overlapping rights in time and space and other complexities that may not be mirrored in agricultural areas, for which land laws and policies are usually designed. Land tenure regimes define who accesses and benefits from particular natural resources and can either present a source of conflict or an opportunity to reduce resource-based tensions. Failure to manage land regimes can create 'open access' tenure regimes that lead to land degradation — the so-called 'tragedy of the commons'.

Policy makers should craft land-focused legislation that accommodates local practices, enhances secure livelihoods and facilitates the types of investments that are attractive to the private sector and have positive social impacts. Investment in agricultural and rural development is lower in many developing countries than one might expect given the importance of the sector to employment and GDP. This discrepancy is even more pronounced in most dryland areas. Notably, the value of the livestock sector is often underestimated, especially in light of the association between urbanization and demand for meat. Land rights and land policies are one of many dimensions of an overall natural resource management approach. Policy reforms will be most successful when they build upon this wider context, which includes capital, banking, price information, credit and general access to input and output markets.

Natural resource management policies should encourage relevant and sustainable investments in drylands. These may range from technical measures such as soil and water conservation, water harvesting and temporary livestock enclosures (to allow natural



regeneration), to investment in research and extension services for drought-tolerant grasses, multipurpose trees and crops. It is crucial, however, that agricultural development does not result in displacement of dry season grazing, as is often the case. Cost benefit analyses may show that irrigated agriculture in drylands does not have as high a net return, especially when environmental and social effects are taken into account.

The building blocks set out in this chapter can underpin a successful development strategy that taps the economic and ecological potential of drylands in manner that is both sustainable and far-reaching. Setting appropriate national policies based on these approaches is essential to accelerating progress in the short term towards meeting the MDGs, and securing longer term sustainable human development.



## 5.

## National policies for MDG acceleration in the drylands and beyond

Countries have made progress in their efforts to reach the MDGs through a combination of time-tested interventions, innovative responses to existing and new challenges and modified approaches that fit local circumstances.<sup>98</sup> Replicating and expanding the successes of some countries in devising appropriate dryland development approaches requires careful identification of the conditions that facilitate those successes.

Furthermore, bringing MDG successes to scale requires that dryland issues be mainstreamed into broader development frameworks. Integrating dryland issues into all phases of development programmes, and building on identifiable conditions for success, are key to national policies that successfully accelerate MDG progress in the drylands and beyond. Leaving dryland people out of the development process is costly in economic terms, and even more so in terms of human suffering, not least because of the frequent relief efforts mounted in response to humanitarian needs resulting from natural disasters such as drought and the subsequent loss of harvests and livestock (see Box 5.1).

### Box 5.1 Comparing drought relief costs and development investments in Maharashtra, India

Most of the costs of humanitarian relief efforts in drylands, as in many other environments, are habitually met by the international community but in India recent rapid economic development now means that these outlays are covered by national or state budgets. This makes it possible to compare the cost of relief with the amounts that are invested in the development of these areas, investments which would go a long way to averting the disaster in the first place.

The drought of 2003–2004 in the Indian state of Maharashtra cost nearly \$900 million in estimated losses and another \$540 million in expenditures incurred, according to the state government. This total amounts to approximately 36 percent of what the state invested on all centrally sponsored and state-supported schemes for irrigation development, agriculture, horticulture, dairy development, animal husbandry, water conservation and rural development during the five years (2002 – 2007) of the Tenth Five Year Plan, or more than the average annual spend on government programmes. These are the direct economic costs to the state. In addition, Maharashtra's rural communities also had to bear very considerable costs in the form of forced labour migration, losses due to distress sales of cattle and jewellery and the social costs of indebtedness and distress.

Source: Maharashtra (2004), Pragmatix Research & Advisory Services (2006).

<sup>98</sup> UNDP (2010b).



## Mainstreaming dryland issues

Although appropriate policies are a prerequisite to progress towards MDG achievements in drylands, they are not sufficient in themselves. Dryland-focused policies must be part of a greater effort to mainstream drylands issues into national and international development frameworks. This requires a systematic process and culture to integrate drylands issues into policies, laws and regulations, institutions, technologies, standards, planning and budgeting frameworks. Mainstreaming should ensure that drylands remain on the agenda throughout implementation, monitoring, evaluation and learning.<sup>99</sup>

This process is part of a strategy that facilitates delivery on all MDGs by prioritizing MDG 7 (Ensure environmental sustainability). Target 1 of MDG 7 requires countries to 'integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources'. Drylands mainstreaming is further legitimized by the UNCCD. In accordance with its provisions and country practices, mainstreaming should occur at all levels of governance, from national to local,<sup>100</sup> thus involving multiple stakeholders. Mainstreaming drylands is also necessary regionally and globally.

The nature of the particular issue will dictate the level at which the impact of mainstreaming is best realized. Information flow between the levels is imperative. A local issue such as grass burning, for instance, is best approached at the district level but the local response to this issue may form part of a national action programme to combat desertification, the primary policy mechanism for UNCCD implementation at the national level.<sup>101</sup> Implementation of the UNCCD can be enhanced at the global level by advocating for increased assistance from developed countries — particularly in finance, technology transfer and capacity development — to address drylands issues in developing countries. In short, the mainstreaming of drylands is part of the wider integration of environmental policy considerations into core institutional thinking at every level.<sup>102</sup>

## Conditions for success

The experiences of countries striving to achieve the MDGs are varied and no single approach is guaranteed to bring success across the board. An assessment of MDG Country Reports points to five broad conditions for success that can inform future efforts.<sup>103</sup> Within these conditions, certain policies may be valid in both drylands and non-dryland areas, while other policy options should focus on dryland-specific circumstances.

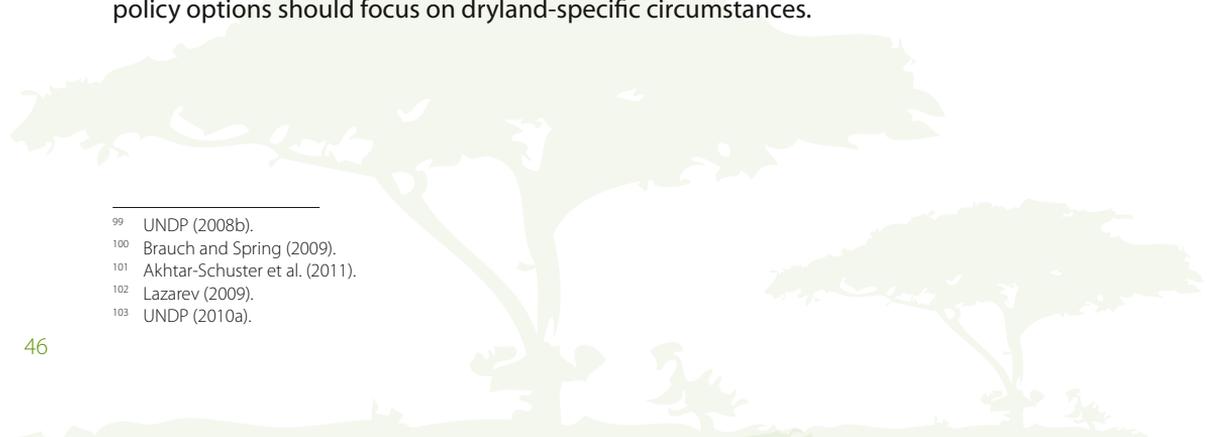
<sup>99</sup> UNDP (2008b).

<sup>100</sup> Brauch and Spring (2009).

<sup>101</sup> Akhtar-Schuster et al. (2011).

<sup>102</sup> Lazarev (2009).

<sup>103</sup> UNDP (2010a).



### Country-led development and effective governance

National development strategies should fully incorporate the needs of dryland populations through consultation and meaningful participation by non-government stakeholders, including vulnerable groups. Numerous examples are provided in this report of how local participation can yield significant progress towards MDG success, including tent schools in Iran, large-scale reforestation in Niger and the programme to build water cisterns in north-east Brazil.

Effective implementation of these strategies requires representative political structures, accountable institutions and public servants motivated by adequate incentives. In Kenya, for instance, the government addressed regional disparities by establishing the Ministry for the Development of Northern Kenya and other Arid Lands to develop and implement specific strategies in the dryland areas that make up more than 80 percent of the country. The synergies evident when progress towards one MDG positively affects others show that policies and institutions should support multisectoral approaches. This integrated approach emphasizes the importance of coordination between ministries, planning and implementing agencies at national and subnational levels.

### Inclusive and pro-poor economic growth

Reducing poverty and hunger can be accelerated by combining economic growth with a more equal distribution of income, assets and opportunities. In most dryland areas, a critical component of an MDG-focused growth strategy is an improvement in farming system productivity. Supporting agriculture through farm input provision (fertilizers, credit, improved seeds and water management) can contribute to higher production and food security. Indeed, cross-country studies show that on average in the developing world, agriculture tends to have an impact on both national growth and poverty reduction that is greater than its simple share of GDP.<sup>104</sup>

Strategies for stimulating agricultural growth should be guided by development pathways that have comparative advantage in particular areas. Agricultural potential, access to markets and infrastructure, and population density are three particularly important factors for determining comparative advantage.<sup>105</sup> In areas with good market access and suitable soils, small-scale irrigation development may yield the highest returns because it can enable production of high-value crops as well as intensified food crops. Extensive livestock production is likely to have comparative advantage in areas with low potential for crop production, particularly those that are remote and sparsely populated, including much of dryland West Africa and the Altiplano-Puna of the Central Andes. Growing markets for livestock products, particularly in developing countries, offer opportunities to maximize the potential benefits in these areas, given appropriate support to poor livestock producers to better integrate with commercial marketing and processing options.<sup>106</sup> The private sector can play a critical role, but public investment in transport and communications, property rights (see Box 5.2), skills development, and technology transfer policies are required.

<sup>104</sup> Valdés and Foster (2010).

<sup>105</sup> Pender and Hazell (2001).

<sup>106</sup> Delgado et al. (1999).



### Box 5.2 Pastoral laws in West Africa

Dryland pastoralists use sophisticated herd management techniques to ensure productivity from a highly variable natural environment, but their chances of continued success can be enhanced by appropriate policies. Several West African countries have enacted legislation that recognizes and regulates access and tenure rights over pastoral resources. Laws in Burkina Faso, Guinea, Mali, Mauritania and Niger recognize mobility as the key strategy for pastoral resource management.

The pastoral laws in these countries aim to protect grazing lands and cattle corridors from agricultural encroachment and to secure herders' access to strategic seasonal resources such as water and dry season grazing. Pastoral laws also regulate multiple and sequential use of resources by different actors (e.g. herders' access to cultivated fields after harvest), and determine the role pastoral people can play in local conflict management. The laws seek to maintain or enable mobility, using tools that vary from the delimitation of pastoral resources to innovative legal concepts such as the *terroir d'attache* in Niger. This is an area, defined under Niger's Rural Code, where herders spend most of the year, and over which they have priority use rights. Outsiders may gain access to these resources but only by negotiating with the rights holders.

Measures to protect the rights of pastoralist communities contribute to MDG achievement in several ways, not least because maintaining and enhancing flexible pastoral systems in the face of increasing environmental and global economic challenges is necessary if an end to extreme poverty and hunger (MDG 1) is to be realized.

Source: Cotula et al. (2006).

### Public investment in education, health and basic services

Many dryland areas suffer from poor service delivery in health and education, often as a result of their low population densities and distance from urban centres. These areas also typically struggle with poor provision of water, sanitation and other basic infrastructural services. Mobile pastoralists present a particular challenge to conventional service provision in drylands. Experience indicates that a combination of mobile and static health services will best meet the needs of mobile communities, with purely mobile services attached to static units for reasons of cost, ease of managerial logistics and to link pastoralists with conventional formal service provision.<sup>107</sup> Schemes that combine human and animal health services benefit additionally from physicians and veterinarians sharing transport and equipment, and can deliver benefits across a range of MDGs.<sup>108</sup>

Similar links between mobile tent schools and pastoralist boarding schools can serve the same functions for education service provision to mobile communities. Teachers and health workers should ideally be recruited from within the pastoralist community to ensure cultural sensitivity. The meaningful participation of pastoralists at all stages of project design is essential. A capacity to innovate — for example, to adapt curricula to the pastoral setting — is also vital.

<sup>107</sup> Schelling et al. (2008).

<sup>108</sup> UN (2008).

Poor people in many remote drylands lack access to modern energy services and the 'gender-poverty-energy nexus' means that a disproportionate burden of domestic activities is shouldered by women.<sup>109</sup> Providing modern energy services by grid electrification is not realistic in many rural drylands, but decentralized energy supplies are viable at the community level and can help achieve numerous MDGs as illustrated in rural Mali (see Box 5.3).

### Box 5.3 Decentralized energy in rural Mali

Almost three quarters of Mali's population live in semi-arid rural areas. Biomass provides virtually the entire energy supply in these areas and women and girls are responsible for the time-consuming and laborious work of fuel collection. Starting in the early 1990s, some villages were supplied with a diesel engine mounted on a platform to provide off-grid energy for uses including processing agricultural produce, pumping water, charging batteries and running lights. Women's groups are trained to operate and maintain the equipment on these 'multifunctional platforms' and sell energy services to local customers. These groups are responsible not only for owning and managing the system, but also for covering up to 60 percent of the platform's initial cost. Platform operations provide enough money for the groups to pay off their loans and cover operating costs. The project relies on government or donor support to cover a portion of the capital costs.

The multifunctional platforms programme was devised to promote the empowerment of women by easing the burden of fuelwood collection and supplying energy services that are labour-saving and income-generating. Freeing women's time has led to multiple benefits, such as increased cash income, higher food consumption, and higher girl to boy ratios in schools.

Source: Anderson et al. (2004).

### Targeted interventions, including social assistance and public employment programmes

Targeting benefits to the poor by geographical location is popular because of its simplicity. Geographically targeted programmes are cost-effective and can reduce poverty significantly. The lower the geographical level, the greater the impact on poverty,<sup>110</sup> so those countries with relevant data disaggregated to the lowest local level are best placed to focus their efforts to achieve MDGs to maximum effect.<sup>111</sup> Although improvements in infrastructure, rural finance and other policy initiatives will help rural dryland economies, some households will lag behind because they do not have the assets to complement positive developments elsewhere in the economy. Government programmes to provide income support and cash transfers to such households can work as well in rural drylands as in any other disadvantaged area. A critical aspect of these conditional cash transfer schemes is to support long-term human capital investments in children, which adds weight to the arguments for simultaneous investment in social infrastructure to improve health and educational services. Cash transfers have also become more common as part of the toolbox of humanitarian responses to natural disaster emergencies, in drylands and elsewhere.<sup>112</sup>

<sup>109</sup> Misana and Karlsson (2001)

<sup>110</sup> Baker and Grosh (1994).

<sup>111</sup> Morocco (2010), for example, uses maps of poverty, vulnerability and inequality at the municipality level in its efforts to achieve MDG 1.

<sup>112</sup> Harvey (2007).



Public employment programmes are another form of targeted intervention that works equally well in dryland and non-dryland rural areas. Government-backed guaranteed work schemes can provide the labour needed to regenerate the rural sector through infrastructural improvements and enhanced agricultural productivity. In India, the National Rural Employment Guarantee Act of 2005 offers up to 100 days of employment per rural household per year on public works. It began in 200 of the country's least developed districts, many of them in drylands: 94 fall under the Drought Prone Areas Programme and 8 under the Desert Development Programme.<sup>113</sup>

### Climate adaptation and low-carbon development

Responses to MDG challenges must be fully integrated with programmes designed to respond to climate change. This merger will promote policies that both improve agricultural productivity and support the diversification of livelihoods away from climate-sensitive activities.

Increasing variability in the environment, in association with a greater frequency and severity of extreme events, is likely to result from climate change. Extreme events affect agricultural productivity and exacerbate poverty vulnerability in many nations.<sup>114</sup> Examples of extreme, climate-related hazards in drylands include droughts, floods, *dzuds*<sup>115</sup> and outbreaks of pests and diseases, both animal and human.

Dryland-focused policy options should help households manage risk and reduce the incidence and impact of shocks. They should build upon and enhance traditional strategies for coping with environmental flux. Such policies will include developing plans to cope with hazards. These plans should contain three basic components: monitoring and early warning, risk assessment, and mitigation and response strategies.<sup>116</sup> Specific elements of these policies will include the development of more climate-resilient varieties of crop and livestock, and market-based approaches that reduce vulnerability by improving market access and increasing incomes. Governments may further contribute to reducing risk and shock in pastoral drylands through livestock insurance schemes, some of which may provide an opportunity to involve the private sector in dryland development (see Box 5.4).

Efforts to diversify livelihoods should recognize that the comparative advantage in some drylands may not be in crops or livestock but in the new opportunities emerging from the climate change agenda. These opportunities have the added attraction of potentially accessing new sources of finance. Where appropriate, policy makers should pursue projects involving carbon sequestration and various forms of renewable energy (solar, wind and modern biomass fuels). Ecotourism is another suitable alternative development pathway for some dryland communities, effectively involving payments for ecosystem services.

<sup>113</sup> CSE (2008).

<sup>114</sup> Syud et al. (2009).

<sup>115</sup> Extreme winter conditions similar to those experienced in central Asian *dzuds* also occur in high-altitude drylands of South America. In the Peruvian Andes, the phenomenon is known as the *friaje* and causes great losses among alpaca herds (Ensor et al., 2009).

<sup>116</sup> See, for example, Wilhite and Svoboda (2001) on drought plans.

### Box 5.4 Index-based livestock insurance in Mongolia

A financial insurance scheme offers pastoralists in Mongolian drylands coverage for their herds against natural hazards, including the catastrophic risks posed by extreme winter weather or *dzud*. A basic commercial policy is sold and serviced by insurance companies that pay out when livestock mortality rates in a region exceed a certain level. If the mortality rate exceeds a predetermined maximum, the government compensates all herders, whether or not they bought the private insurance. This procedure effectively means the largest losses are transferred to the government using a public safety net programme.

Using a mortality rate index, which varies by species in each local region, provides a strong incentive to individual herders to continue to manage their herds to minimize the impact of hazards. An individual herder receives an insurance payout based on local mortality, irrespective of their individual loss.

Source: Mahul and Skees (2007).

## Conclusions

The conditions for success highlighted here should be viewed as interconnected and of equal importance in supporting national efforts to achieve the MDGs. Policies that emphasize effective governance; inclusive growth; adequate public investments; targeted intervention; and climate-resilient, low-carbon development work together to create a development environment more conducive to combating poverty.

To be effective, dryland-focused policy options to be multidisciplinary and fully integrated. Although MDGs are measured in isolation, helping people to escape the poverty trap requires policies that tackle all aspects contributing to poverty — such as nutrition, education, disease, gender inequalities — as part of one dynamic. Moreover, policies should transcend the rigid categorization of ‘dryland’ or ‘non-dryland’ oriented, while recognizing that some factors are particularly important in the case of drylands. Just as the drylands and their inhabitants do not exist in isolation, neither should the development programmes that respond to their challenges.

Widespread, successful development in drylands will require a fundamental re-evaluation of their natural systems, in economic and other terms. New methods of valuation that recognize the economic and environmental potential of drylands, including the reality of differing comparative advantages, are required. The essence of policies designed to tackle rural poverty in drylands is to concentrate on improving household activities that are already available, which in most places means some form of agriculture, while also expanding the range of potential activities of family members. The increasing realization that some drylands have alternative development options is important. Some of these options are not only valuable for dryland communities but are also of interest regionally and globally. They include payments for ecosystem services, carbon sequestration, tourism, biofuel production and other forms of renewable energy. Drylands can be an important source of industrial products, supporting development in urban areas. Increasing the number of income-generating options can make



dryland regions more attractive for public and private investment, leading to better services and infrastructure in a virtuous circle of development.

MDG achievements among poorer dryland populations require tailored policies that reduce risk. Successful strategies are based on maximizing the efficient use of sporadic resources, value addition and market access for livelihood security, and provision of services, such as education and health. Typical elements in dryland success stories include methods for managing risk, varying from policies and practices such as floor price support and mobile abattoirs for drought offtake of animals, to investment in appropriate agricultural research and provision of inputs and infrastructure, to more exotic instruments such as weather insurance, which are currently experimental. Sociocultural challenges specific to drylands are also pertinent. Mobility is particularly important to numerous dryland communities as a risk management strategy. However, mobility is rarely well incorporated into policy. While this is especially true for service delivery, it also holds for issues related to traversing frontiers, whether disease corridors or national boundaries. Examples of innovative policies in this area include mobile education, mobile banks, mobile human and animal health care and 'pastoral passports'.

Climate change and variability remains one of the most pressing challenges facing dryland communities. Helping households reduce climate-related shocks must be a priority. The widespread adoption of climate-resilient crop varieties, expansion of market opportunities, and government, or ideally, public-private insurance against livestock losses, can strengthen the adaptive capacity of dryland people and move countries towards climate-resilient development.

Targeted social assistance and safety nets are also important, preventing and/or rebuilding asset loss, which drives a vicious cycle of vulnerability and dependency. Safety nets can include options such as school feeding programmes, which significantly increase school enrolment in dry areas, particularly in times of drought. These programmes have long-term effects on MDGs in dry areas, including through human capacity development.

Development interventions should be evaluated not only for their impact on aggregate populations, but from the perspective of often marginalized groups, most notably women. The gender-specific nature of labour divisions in both dryland and non-dryland areas means that women and girls can play a particularly important role in indentifying and addressing dryland challenges. Although women are in most instances the primary gatherers and users of resources, they tend to be excluded from policy- and decision-making processes.

The policies and programmes that will ultimately lead to MDG achievement can only be successful in an open and responsive political climate. Governance structures that are both representative and accountable are needed to develop the country-led strategies that will alleviate dryland poverty. Capable institutions staffed by adequately trained and motivated public sector employees should lead these efforts. Good governance will enable the requisite coordination of initiatives among ministries and government offices to ensure a coherent and holistic approach to dryland development.

Effective and accountable governance also plays a vital role in targeting the investments needed for sustainable change. The importance of public investment — both infrastructure and social investment — cannot be understated. Public spending is essential to attract and maintain the benefits of private investment: without enhanced infrastructure, private investors will continue to shy away from the drylands. Without increased investment in social indicators such as education and health, the payoff from investments elsewhere will only be transient.





## Recommendations: Remembering the forgotten billion

For too long, the development community has overlooked the world's drylands. Now is the time to reverse this history of neglect. If the world is to meet the 2015 deadline for achieving the MDGs, drylands must be included at all levels of development planning and implementation. Economically and environmentally, we cannot afford to ignore drylands and their inhabitants.

Contrary to common perception, drylands are culturally and environmentally rich, home to vibrant communities and complex ecosystems. They hold the potential — both immediate and long term — to drive national-level economic growth and sustainable human development. By refocusing development agendas to include dryland-specific opportunities and challenges, countries can break the dryland-poverty nexus.

Including dryland issues at all levels of development will not only benefit dryland inhabitants, but will help countries meet key poverty reduction and MDG-related goals. Untapped and overlooked dryland resources can provide solutions to a number of global challenges. Food insecurity, rural poverty, energy insecurity, biodiversity loss, climate change, political instability, geopolitical conflict and forced migrations may find at least partial resolution through the successful harnessing and direction of drylands' unique assets.

Looking forward, the international community should move urgently to enhance assistance and support — financial, technical and human — to drylands. Crucially, policy planning should merge dryland issues into broader development frameworks. This will require a systemic process to integrate drylands into policies, laws, institutions and governance structures. The potential of the drylands will be unleashed through the participatory and country-led development and implementation of strategies that improve the well-being and resilience of dryland people and ecosystems through both targeted and mainstream development initiatives.

Similarly, we must fundamentally rethink our understanding of the costs of dryland development. Economic decisions should be informed by the long-term costs of neglect rather than simply the immediate costs of action. The benefits of reducing risk and alleviating poverty in dry areas will pay off for generations to come. Among the most marginalized group in particular, including women and girls and the poorest of the poor, the social and economic benefits of development investments can ripple far beyond the initial cost of intervention.

Attention to the often degraded natural resource base, through investment in halting desertification and rehabilitating and reclaiming degraded lands, is also critical. The well-being of dryland communities is closely tied to the health of the natural environment. Donor support and public sector investments can smooth the way for increased private investment in, and prioritizing of, issues related to desertification, land degradation and drought.

Remembering the forgotten billion will require concerted political will and a coordinated commitment among development partners. As demonstrated in the MDG Country Reports and elsewhere, impressive successes can be attained with the right mix of leadership, policy and financial investments. The time has come for governments, donors and private sector partners to step up together and develop a framework to support lasting MDG achievements in the drylands and beyond.





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